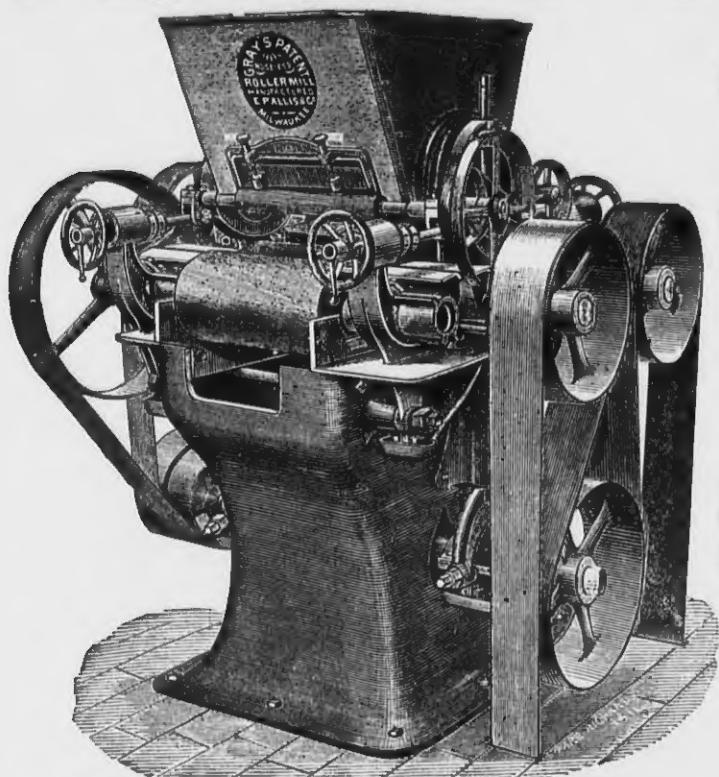
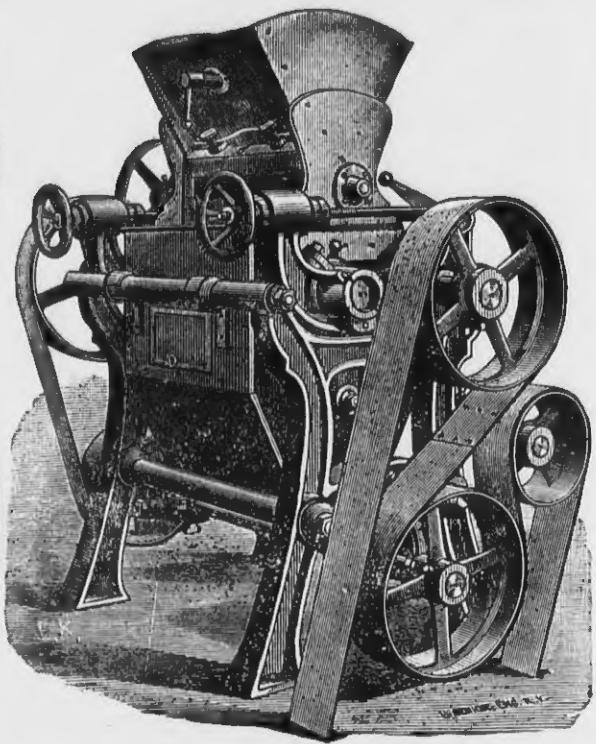


GRAY'S PATENT NOISELESS ROLLER MILLS



—WITH—

**CORRUGATED**

—OR—

SMOOTH CHILLED IRON ROLLS

And WEGMANN'S PATENT PORCELAIN ROLLS.

MANUFACTURED EXCLUSIVELY BY

EDW. P. ALLIS & CO.
MILWAUKEE, WIS.

TO MILLERS USING NOISELESS ROLLS WITH POSITIVE BELT DRIVE.

We have at great expense obtained valuable Letters Patent known as the Gray Patents, being Nos. 222,895, 228,525, 235,761, 238,677, 251,217, of dates Dec. 23, '79, June 8, '80, Dec. 21, '80, March 8, '81, Dec. 20, '81, and which fully cover and protect our noiseless Belt Drive Roller Mill. We have with no little patience been aware that certain manufacturers have been infringing one or all of these patents, and inducing the Millers to purchase Rollers from them.

Now we are determined to bring suits against all users of such Rollers unless they will acknowledge the validity of our patents and pay us a royalty for using them.

While we may seriously regret to take such a course, yet all can easily understand that in order to protect our rights we must declare and enforce them.

We have instructed our attorney to institute suits against infringers, and before another month we expect that suits will be begun. If any Miller desires to settle before suit we will be liberal with him.

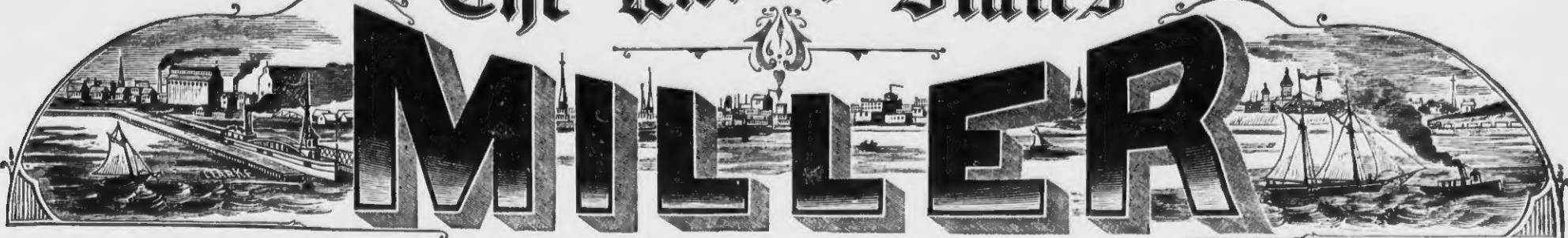
Our desire is to furnish the best Noiseless Roller Mill made, and we claim that we do. Our patents are the foundation patents. A hint to the wise is sufficient.

EDW. P. ALLIS & CO.

[Mention this paper when you write to us.]

The United States

MILLER



Published by
E. HARRISON CAWKER. { Vol. 13, No. 2.}

MILWAUKEE, JUNE, 1882.

{Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.

The Urban Roller Mills, Buffalo, N. Y.

We have the pleasure of presenting to our readers an illustration of the new URBAN ROLLER MILLS, erected by the JOHN T. NOYE MANUFACTURING CO. of Buffalo, N. Y., for Messrs. Urban & Son, the well-known manufacturers, exporters and dealers in flour at Buffalo, N. Y., at a cost of \$75,000.

The mill, which is situated on Ellicott street, near Genesee, is six stories high, including the basement. It is 40x96 feet on the ground, built of brick, and well lighted and

On the first floor are four Eureka packers, built by Barnard & Leas, and a hopper scale. On this floor the flour is prepared for the market, marked and shipped.

On the second floor are 14 stands of Stevens roller mills, each containing two pairs of rolls, and also the flour-bins.

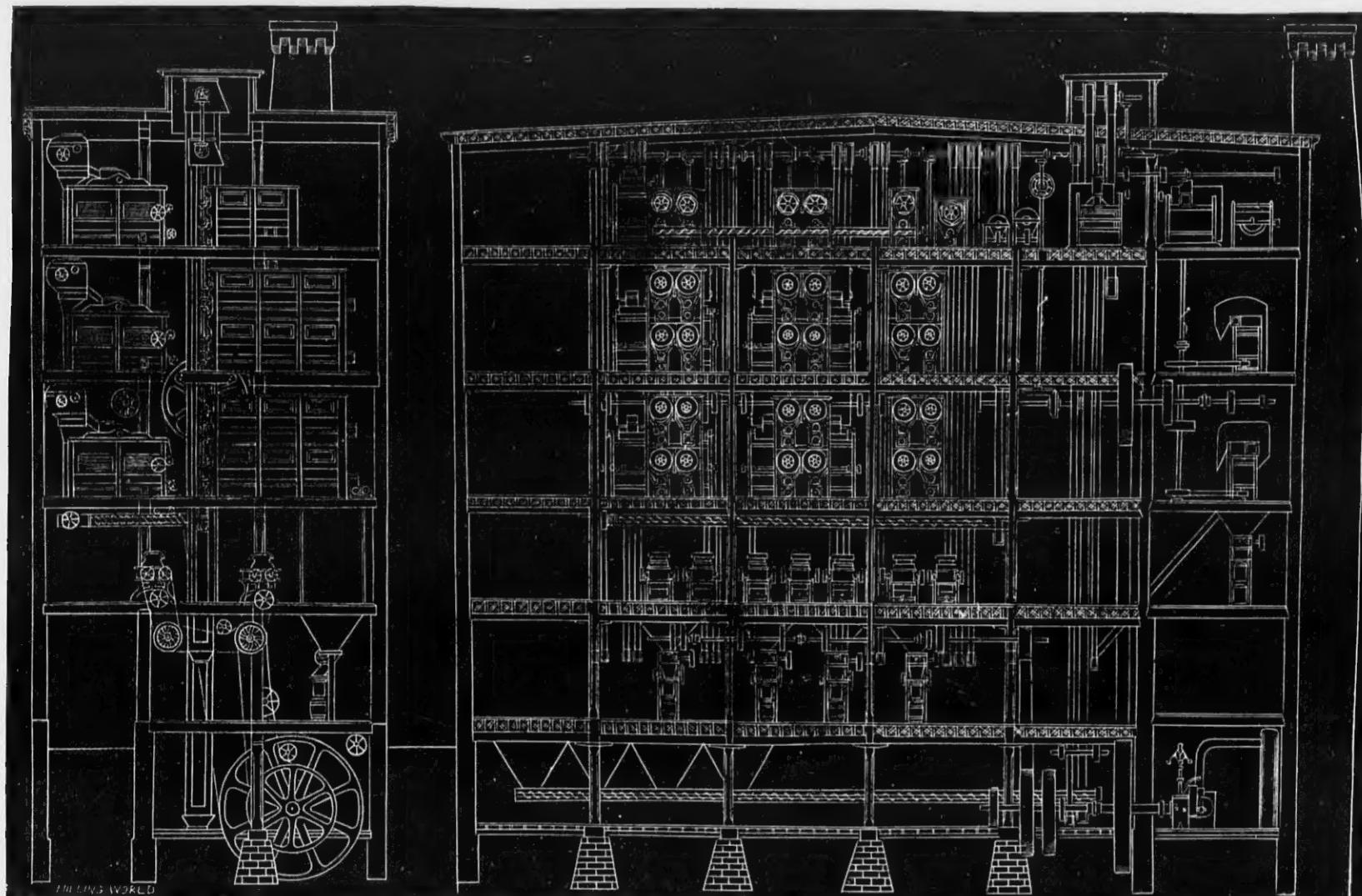
These roller mills are all driven by belt, being supplied with Holt's Belt Movement, and are also provided with a device for throwing the rolls apart, simultaneously, without interfering with the adjustment.

The third and fourth floors are given up to

could be easily flooded. There are thousands of feet of belts and hundreds of pulleys in the mill. There are also about 200 spouts and 30 elevators in the mill. Grain is taken from the receiving bins and elevated to the receiving separator on the fifth floor. Here it is cleaned of the coarser impurities and then run to the stock bins, from which it is taken as it is needed. The grain as it leaves the separator is under the control of a man on the first floor, who by moving a hand on a dial directs it to such bins as he sees fit. The mill is heated with steam throughout, and

tinute to heat until finally a larger contact surface is ground out, large enough to admit lubricants. It often takes considerable time to effect this wearing and millers often lose their patience and swear. Often when the steps get in good running order, a settling of the building or a retramping will get them out of order and the steps will heat again.

E. P. Allis & Co. have invented and patented a tram-step, which they warrant never to heat. This step contains a square steel button which cannot rotate. Its upper side is faced perfectly straight;



CROSS SECTION.

THE URBAN ROLLER MILLS, BUFFALO, N. Y.

LONGITUDINAL SECTIONAL ELEVATION.

ventilated. The main building stands back some distance from the street, leaving a vacant space 40x80 in which teams may stand without obstructing the street. In the rear of the main building is a boiler-house 25x30 feet with an iron roof. This building is separated from the main building by a fire-proof wall and contains the boilers, coal bunkers, and a bath room for the use of the millers. The boilers, which are two in number, were built by RITTER BROS., of Buffalo, N. Y. They are made of steel, and are 14 feet long and 66 inches in diameter. Between the main building and the boiler-room is a fire-proof oil-room. The boiler-room is level with the basement, with which it is connected by an iron door.

In the basement of the main building are the receiving bins, the engine and the fly-wheel, the latter weighing 20,000 pounds. The engine is a 200-horse power Reynolds-Corliss, built by E. P. ALLIS & CO., Milwaukee, Wis. The cylinder has a 22-inch bore, and the stroke is 48 inches. This engine is of the plainest possible character, no attempt at ornamentation being made, yet in steadiness and power of motion, it is of the highest character, working absolutely noiselessly, and being remarkable for the quickness and certainty with which it is governed. In the engine-room is also a Worthington pump and a Berryman heater.

the bolting chests and purifiers; each floor having three four-reel chests, and five SMITH purifiers, the latter blowing into Kirk & Fender's Dust Catchers.

On the fifth floor there are five scalping-reels, two bran-dusters, one "Fir" centrifugal reel, from Messrs. Fiechter & Pruss, Minneapolis, and one Smith purifier. In the rear part of the main building and separated from the flouring machinery described, are the grain, bran and feed bins, and the cleaning machinery. The cleaning machinery consists of one Barnard & Leas receiving-separator, one Richmond milling separator, one Kurth cockle-separator, two Richmond brush-machines, and one Howes, Babcock & Ewell magnetic separator.

The building on the grinding floor is connected by a tram-way with a three-story brick building which Messrs. URBAN & SON are now putting up on Oak Street. This building is 40x90 feet, and will be used as a store. Howard elevators operated by steam will be placed in both the main building and the store. A covered drive-way 10 feet wide extends from Ellicott to Oak Street on the north side, allowing flour and grain to be easily handled, and coal to be dumped directly in front of the boilers. A standing pipe runs through the main building from top to bottom, with connections for hose on each floor, so that in case of fire the mill

the walls are painted white. From 20 to 25 men are employed.

[Written for the UNITED STATES MILLER.]
Plain Talks About Milling.

By RICHARD BIRKHOLZ, M. E.

(Continued from May number.)

The steps for large and heavy, fast running upright shafts are often very troublesome, particularly when new. They are often sources of loss to the miller owing to the stoppages made necessary by their getting out of order and no amount of oil will keep them cool at times. It often puzzles the most skilful practical mechanic to ascertain what causes a sudden heating of the steps.

The difficulty generally arises out of too small bearing surface afforded by the convexity of the touching surfaces of both the steel point of shaft and the button.

This must be resorted to, to get a square bearing in case the step should not stand perfectly level or in case the building or foundation timber of such steps should begin to settle. When shafts are not heavy and do not run more than 40 revolutions per minute, but little trouble will arise, but when the two convex surfaces of the shaft and button, touching each other at *one point* are pressed together so tightly that no film of oil intervenes—the heating is unavoidable. The steps will con-

tinute to heat until finally a larger contact surface is ground out, large enough to admit lubricants. It often takes considerable time to effect this wearing and millers often lose their patience and swear. Often when the steps get in good running order, a settling of the building or a retramping will get them out of order and the steps will heat again.

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(Continued on page 22.)

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MILWAUKEE, JUNE, 1882.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

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The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

K. H. STONE, Esq., of The St. Louis Miller, paid our office a brief visit during the month.

M. T. BOULT, Esq., of the Riverside Mill Co., of Appleton, Wis., called during the month.

SEVEN MILLION dollars worth of property in the United States was destroyed by fire during the month of April.

THE total shipments of flour from San Francisco to foreign countries during the month of April were 90,413 barrels, valued at \$460,545.45.

MAY 2, the steamer Gaelic sailed from San Francisco with 5,203 barrels of flour, invoiced at \$25,204.40, for China, and 1,260 bbls for Japan valued at \$7,634.45.

THE grain trade of Russia is said to be badly demoralized. This is a direct result of Russian persecution of the Jews who controlled the trade to a great extent.

WE have received O. J. Bollinger's Water Wheel Catalogue for 1881, York, Pa. It is a handsome catalogue, full of information for millers. All users of water wheels should write to him for a copy.

THE Australian wheat crop is very short. Cargoes have been purchased from California for Melbourne and Adelaide, and there seems to be a probability that there will be a considerable demand for American wheat in Australia.

THE first new wheat of the crop of 1882 was received and sold in St. Louis, April 29. The lot consisted of 100 sacks and was sold for \$4.50 per bushel. It came from Johnson County, Arkansas, and was consigned to S. W. Cobb & Co.

EIGHT electric light companies including the Edison Company have consolidated under the style of the Gramme Electrical Company. Now if this electrical company "pools its issues" with the gas companies and the Standard Oil Co., poor folks will have to fall back on the old tallow dip, or go to bed in the dark.

THE Anti-Chinese bill has become a law. The bill prohibits immigration of Chinese to this country for ten years. Chinamen must go.

This subject has attracted much attention and provoked much discussion, and it seems as if it was all unnecessary. The Chinese came in the first place because there was a demand for their labor and they continued to come for the same reason. The citizens of the Pacific coast might have readily settled the whole matter by "boycotting" the Chinese; refusing to employ them or to purchase goods of their manufacture. If this plan had been adopted unanimously the steamers bound for the "Flower Kingdom" would soon have been crowded with homeward bound Chinamen. We doubt very much if the law now passed will give entire satisfaction.

MILWAUKEE is now one of the greatest manufacturing centres of milling machinery in the world. Among the widely known manufacturing institutions here are the Reliance Works of Messrs. Edw. P. Allis & Co.; The Cream City Iron Works of Filer, Stowell & Co.; The Cockle Separator Manufacturing Co.; Messrs. Birge & Smith, mill-builders, etc.; The Milwaukee Dust Machine Company and Messrs. Weisel & Vitters, Engine builders, etc. The most extensive mill-building and furnishing establishment probably in this country is the one first named, but all of the others are doing an extensive and profitable business. Milwaukee has great advantages which will certainly make it one of the great manufacturing centres of the country. To those about to embark in the manufacturing business we would say, that they will do well to examine Milwaukee's advantages before locating elsewhere.

MR. JOSEPH NIMMO, jr., of the Bureau of Statistics, reports that the exports of domestic breadstuffs during March amounted to \$12,404,785, against \$22,301,161 for the same month in 1881, or a decrease of over 45 per cent. The total values for the exports during the three months ended March 31 of each of the years named were respectively \$35,557,452 and \$51,149,613, a loss of about 30 per cent. For the nine months ended March 31, last, the value of the exports of domestic breadstuffs was \$147,701,367, against \$204,729,787 for a like period in the preceding fiscal year, a loss of about 25 per cent. The exports of tallow and provisions fell off about 50 per cent in March, 1882, as compared with March, 1881, and about 33 $\frac{1}{2}$ per cent during the three months ended March 31, last, as against the same three months in 1881. For five months ended March 31, these exports fell off nearly 25 per cent, and for eleven months ended with same date they decreased about 22 per cent.

Bashful Millers.

We have been present at many meetings of millers at their state and national meetings and have often regretted that so few of those present ever made their voices heard. This ought not to be the case. As a general thing, so far as our observations have extended, three or four gentlemen had to run the meeting, do the speaking, make the motions, etc., during the sitting of the convention, but the moment the convention was adjourned every miller in the room would turn sociably to his neighbor and enter into cheerful conversation conveying to each other in this way many beneficial ideas which ought to have been brought before the convention as a body.

More than this, we have known a miller to attend a meeting and after it was all over say that "two or three fellows run the machine just as they wanted to." We asked him why he did not pitch in and help run it. "Oh! I don't know" he replied, and changed the subject. Every flour mill owner in each state should become an active working member of the state association, should be present at the

regular annual meeting and be prepared to say something "for the good of the order" when those annual meetings were held. Just think of it, what a grand and influential association the state of Wisconsin could have if every one of the 780 mills were represented. Such an association would be a financial benefit to every individual mill in the state, great or small and the expense of it to each miller would be trifling compared to the benefits that might be obtained.

Death of Ex-Governor Cadwallader C. Washburn.

Sunday, May 14, 1882, Gen. C. C. Washburn breathed his last at Eureka Springs, Ark., whither he had gone in the vain hope of regaining his health. He was born in Livermore, Me., in 1818. There he grew to manhood, but emigrated to Wisconsin, then a territory, in 1841 and commenced the banking business at Mineral Point. He removed from there to LaCrosse and was elected to Congress in 1854, where he remained until the war broke out in 1861, when he resigned and entered the army at the head of a cavalry regiment which he raised. After serving four years he returned home a Major General and was immediately again elected to Congress, where he remained until 1871. He was then elected Governor of Wisconsin. This was the last public office he held, his term as Governor expiring in 1873.

Gen. Washburn's name was known in milling circles throughout the world as owner of the great Washburn flouring mills in Minneapolis. From his various investments it is estimated that he left at his death an estate worth more than \$2,000,000. Among his great gifts to Wisconsin is the Washburn Observatory at Madison which cost upwards of \$100,000. He also presented his magnificent country seat called Edgewood, near Madison, to be used as a reform school for girls. He was a great-hearted, charitable, honorable man and his country mourns to lose him.

Cornell University and Mechanic Arts.

In 1870, Hon. Hiram Sibley, of Rochester, N. Y., provided for the erection of a suitable building for the Department of Mechanical Arts of the Cornell University, at Ithaca, N. Y. He also gave ten thousand dollars for increasing its equipment of tools, machines, etc., and has since made a further gift of thirty thousand dollars for the endowment of the professorship of Practical Mechanics and Machine Construction. Still later he provided means for erecting and fitting up a brass and iron foundry, and a blacksmith shop.

Closely connected with the lecture-rooms are the rooms for freehand and mechanical drawing, the designing of machinery, and pattern-making, and the machine shop. The shop practice embraces work requiring the use of all hand tools and the machines employed in the ordinary machine shops.

Each student in the department is required to devote two hours a day to work in the shop; but such students as have, before entering, acquired sufficient practical knowledge, are admitted to advanced standing. Attendance is required upon ten lectures or recitations a week, or their equivalent, in addition to two hours daily drawing, two hours daily shop-work, and the passing of the examination at the close of each term. The complete course occupies four years.

The machine shop is used for the sole purpose of giving instruction in practical work. It is supplied with lathes of various kinds, planers, grinding machinery, drilling machines, shaping machines, a universal milling machine fitted for cutting plane, bevel, and spiral gears, spiral cutters, twist drills, with additional tools and attachments for graduating scales and circles, and for working various forms and shapes.

In addition to the hand and lathe tools of the usual kind there are tools of the greatest accuracy, consisting of standard surface-plates, straight edges, and squares of various sizes, a standard measuring machine, measuring from zero to twelve inches by the tenthousandth of an inch, a universal grinding machine for producing true cylindrical and conical forms, and a set of Bett's standard gauges.

In the iron and brass foundry and the blacksmith shop, instruction is given in molding, casting, and forging. The cupola used is one of Colliau's improved, with a capacity of melting one ton of iron per hour.

For the purpose of instruction in experimental work there is a twenty-ton Rieble testing machine, arranged for testing the

strength of materials by tension, compression, and transverse strain; Richard's and Thompson's steam-engine indicators, and Amsler's planometer; Schaeffer & Budenberg's revolution counter, steam-gauges, injector, inspirator, pop-valve, steam pump; Baldwin's link and valve motion, experimental valve motion, together with a large collection of brass, iron, and wooden models instructive and mechanical principles.

The course of instruction in mechanical drawing is progressive, from a geometrical drawing to the designing of machines and the making of complete working drawings.

The appliances for instruction consist of several hundred drawings selected from those of technical schools abroad, and from representative American steam-engine makers and others; of photographs, models, and machines; and of apparatus used in copying by the "blue print process."

The Codfish.

This tropical bird very seldom wings his way so far west as Wyoming. He loves the sea breeze and humid atmosphere of the Atlantic ocean, and when isolated in this mountain clime pines for his native home.

The codfish cannot sing, but is prized for his beautiful plumage and seductive odor.

The codfish of commerce is devoid of digestive apparatus, and is more or less permeated with salt.

Codfish on toast if not as expensive as quail on toast.

The codfish ball is made of the shattered remains of the adult codfish mixed with the tropical Irish potato of commerce.

The codfish has a great wealth of glad unfettered smile. When he laughs at anything he has that same wide waste of mirth and back teeth that Mr. Talmage has. The Wyoming codfish is generally dead. Death in most cases is the result of exposure and loss of appetite. No one can look at the codfish of commerce and not shed a tear. Far from home with his system filled with salt, while his internal economy is gone, there is an air of sadness and homesickness and briny hopelessness about him that no one can see unmoved.

It is in our home life, however that the codfish makes himself felt and remembered. When he enters our household, we feel his all-prevading presence, like the perfume of wooden violets, or the seductive odor of a dead mouse in a piano.

Friends may visit us and go away to be forgotten with the advent of a new face, but the cold, calm, silent corpse of the codfish cannot be forgotten. Its chastened influence permeates the entire ranch. It steals into the parlor like an unbidden guest and flavors the costly curtains and high-priced lambrequins. It enters the dark closet and dallies lovingly with our swallow-tailed coat. It goes into your sleeping apartment and makes its home in your glove box and handkerchief case.

That is why we say it is a solemn thing to take the life of a codfish. We would not do it. We would pass him by a thousand times, no matter how ferocious he might be, rather than take his life, and have our happy home haunted by his unholy presence.—Laramie Boomerang.

Items of News.

A 125-barrel roller mill using rolls for reduction purposes and for flouring middlings and finishing low grade (rolls exclusively) is being built at Chattanooga, Tenn., for C. C. Shelton, proprietor of the well-known "Citico Mills," Nordyke & Marmon Co., of Indianapolis, Ind., to furnish the entire machinery.

Louisville, Ky., is about to redeem its reputation for good flouring mills, in the enterprise of Mr. C. M. Slocum, a well known miller of Mt. Sterling, Ky., who is about to build a four-run new process flouring mill there, having placed his order for the entire outfit with Nordyke & Marmon Co., of Indianapolis, Ind.

The plans for the new Excelsior Flouring Mill at Minneapolis, Minn., have been completed. The building will be of stone, 40x105 feet, and six stories and basement in height. The motive power will be supplied by a thirty-five inch Victor wheel under thirty-five feet head, which will yield about 400-horse power. The daily capacity will be 800 barrels.

Hicks, Brown & Co., of Mansfield, Ohio are increasing their capacity to 400 barrels and changing to the full roller system. They will use the Gray Patent Noiseless Roller Machines, with sharp cutting rolls on the wheat reductions, and 16 pairs of Wegmann's Patent Porcelain Rolls on the middlings. Edw. P. Allis & Co., of Milwaukee, have the order.

The Positive Adjustment and Automatic Middlings Mill.

We illustrate this month a new and novel middlings mill. New to the world at large, although it has been thoroughly tested for over three years, in which time the inventor, Mr. S. P. Walling, a practical miller and millwright, has put in operation a large number of them and with the best results. He has taken out several patents on it and thoroughly perfected its various points, so that in offering it to the public the manufacturers state that it will be guaranteed not only to equal but to excel other mills now in the market, as it contains many valuable points which the milling fraternity have long felt the need of. In this mill the temper screw is applied direct to the top of the spindle which fixes the distance between the buhrs and renders it impossible for them to touch each other should the feed stop and the buhrs run empty, though set to a close flouting point. The runner or under buhr is rigged upon the spindle, although easily removed to dress, and it is held to the upper buhr by a lever and adjustable weight so any desired pressure can be had to hold it to its work. At the same time should any iron or any foreign substance come between the buhrs they will open and let it through and after it has passed come back to exactly the same point and continue their work. Should the material accidentally be fed into the buhrs too fast they will open enough to save clogging or throwing off the belt. There is a perfect setting device at each end of the spindle, but the set at the step or lower end of the spindle is automatic in its adjustment to the upper set. The spindle at both top and bottom is furnished with adjustable side bearing boxes, so the strain of the driving belt is upon the lower side bearing box and not on the steel plug in the lower end of the spindle. This steel plug simply carries the weight and is subject to no side strain. The columns are cast solid with the curb and base and coupled together in the center as shown in the cut so they have no side sway or tremble as is noticeable in other portable mills which have a joint at each end of the columns, so that the heating or warming of the spindle and the expansion of the iron does not close the buhrs together as in other portable mills. The upper buhr rests on rubber cushions so that trammimg is rendered very easy and perfect. The curb is furnished with three openings at equal points to make examination easy when trammimg or setting the cap stone with the runner. The oil pot in the step holds nearly a pint of oil and the wearing plate in the step is two inches above the bottom of the oil cup so that the sediment can settle below the wearing surface. These mills are more easily taken apart and put together than any other, as the cap stone rests at three points on rubber cushions so that one point can be raised or lowered without varying the others. With four points, when one is raised or lowered it must move the point opposite. The curbs are turned out and the cap that holds the upper stone is turned to fit so the joint moves easily and does not bind. These mills are built strongly with large bearing surfaces, and for grinding middlings, wheat, buckwheat, corn, feed, plaster, paint, coal facings and all kinds of minerals usually ground in buhr stones, the manufacturers claim that they have no equal, as they run to a positive point with an automatic adjustment and are self protecting, self oiling, self adjusting and in perfect balance. They are claimed to be simple, durable, and economical. Our readers will undoubtedly recognize this firm as the manufacturers of the well known Brewster buckwheat refiner, which received the highest award of merit at the millers' international exposition at Cincinnati, in 1880. Their reputation for thorough and careful workmanship is unquestioned, and they express a determination to keep their work up to the high standard which has been attained in years past. Further particulars regarding the middlings mill or buckwheat refiner will be cheerfully furnished by the manufacturers, Messrs. Brewster Bros. & Co., Unadilla, N. Y.

The Brewster Buck-Wheat Refiner.

While the mechanism for the various processes of wheat-flour manufacture have been the subjects of much inventive thought and study, and while the past few years have witnessed marvelous and radical changes therein, the manufacture of other cereal food products (especially buck-wheat flour), have not been considered of so much importance until of late years. Now, buck-wheat flour is known to be a healthy and nourishing food, when

properly made, and the Brewster process is said to be by far the best for its manufacture. Since buck-wheat flour was made by the Brewster process, it has become well known and highly valued as a pleasant, healthy and nutritious food throughout the civilized world, and the fact shows well the merits of the Brewster machinery, and if our grandfathers could only see the method of making buckwheat flour now, and the great excellence of the flour as now made, they would indeed wonder that they had not set their minds to work on the matter long years ago and have enabled their own generation to know what good buck-wheat flour was.

We have the pleasure of presenting on this page, an illustration of Brewster's Celebrated Buck Wheat Refiner, which has met with the greatest favor amongst millers making the manufacture of buck-wheat flour either a specialty or a branch of their business. These machines are furnished with French buhr stones to crack and hull the buckwheat, which after long experience it has been found can be done better in this, than in any other way. It is claimed that 50,000 bushels of buck-wheat may be passed between the stones before it is necessary to redress them. The buhrs run about an eighth of an inch

apart, thus hulling and leaving a large portion of the meats of the buck-wheat kernels whole. The buhrs are adjusted by a single touch when running, thereby always doing good work. The products from the buhrs are divided into five grades, four of which are purified with air currents (suitable to size and weight) and each blast of air is controlled independent from the others. The product of the upper screen is composed of hulls and a little whole grain. The hulls are removed by an air current and the whole kernels re-

perfectly and without waste. The bran drawn from the different grades is repurified, and anything worth saving is returned to the buhrs.

The machines are furnished with tight and loose drive pulleys, counter-balance screens, steel madril fan and a perfect feeding device, so that one can stop and start with the grain in the refiner, obviating all danger of clogging, and they occupy but little space, and require but little attention. These machines require but little power; they are strongly and substantially built of selected materials being constructed with especial reference to the requirements of millers and the work they have to per-

form. These Refiners are manufactured by MESSRS. BREWSTER BROS. & CO. of UNADILLA, N. Y., a firm well known to most millers to be rapidly growing into favor with many mill-furnishers. They will cheerfully answer all correspondence addressed to them about milling machinery, and especially about machinery for the manufacture of buck-wheat flour.

ALL Europe is coming over or will, if the present rate of immigration continues. By and by the question will be, What shall we do with all these people? or, rather, what will they do with themselves? Chicago Journal. Orrather, what will they do with us?

A Popular Illustration of the Magnitude of England's Annual Production of Coal.

Sir Henry Bessemer, the famous inventor, has addressed to the youths of England, through the medium of the London *Times*, a letter in which he strives to convey to them an idea of the quantity of coal annually produced in England. As our own country produces fully one-half the quantity, his popular

the mind's eye of my young friends something like the true meaning of those figures; for mere magnitude to the youthful mind has always an absorbing interest, and the gigantic works of the ancients, fortunately supply us with a ready means of comparison with our own. Let us take, as an example, the great pyramid of Gheezeh, a work of human labor which has excited the admiration of the world for thousands of years. Though in itself inaccessible to my young friends, we fortunately have its base clearly marked out in the metropolis.

When Inigo Jones laid out Lincoln's-in-fields, he placed the houses on opposite sides of the square just so far from each other as to enclose a space between them of precisely the same dimensions as the base of the great pyramid. Measuring up to the front walls of the houses, this space is just equal to eleven acres and four poles. Now, if my young friends will imagine St. Paul's Cathedral to be placed in the center of this square space, and having a flagstaff 95 feet in height standing up above the top of the cross, we shall have attained an altitude of 499 feet, which is precisely equal to that of the great pyramid. Further let us imagine that four ropes are made to extend from the top of this flag-staff, each one terminating at one of the four corners of the square and touching the front walls of the houses. We shall then have a perfect outline of the pyramid of exactly the same size as the original. The whole space enclosed within these diagonal ropes is equal to 79,881,417 cubic feet, and if occupied by one solid mass of coal it would weigh 2,781,581 tons—a mass less than one fifty-fifth part of the coal raised last year in Great Britain. In fact the coal trade could supply such a mass as this every week, and at the end of the year have more than nine million tons to spare.

Higher up the Nile, Thebes presents us with another example of what may be accomplished by human labor. The great temple of Amun, at Carnac, with its hundred columns of 12 feet in diameter, and over 100 feet in height, can not fail to deeply impress the imagination of all, who in their mind's eye, can realize this magnificent colonnade. It may be interesting to ascertain what size of column and what extent of colonnade we could construct with the coal we laboriously sculpture from its solid bed in every year.

Let us imagine a plain, cylindrical column of 50 feet in diameter and 500 feet in height, our one year's production of coal would suffice to make no less than 4511 of these gigantic columns, which, if placed only at their own diameter apart, would form a colonnade which would extend in a straight line to a distance of no less than 85 miles and 750 yards—in fact we dig in every working day throughout the year a little more than enough to form 14 of these tall and massive columns, which if placed upon each other, would reach an altitude of 7,000 feet.

But there is yet another great work of antiquity which our boys will not fail to remember as offering itself for comparison; they have all heard of the Great Wall of China, which was erected more than 2,000 years ago to exclude the Tartars from the Chinese empire. This great wall extends to a distance of 1400 miles, and is 20 feet in height, and 24 feet in thickness, and hence contains no less than 8,548,160,000 cubic feet of solid matter. Now our last year's production of coal was 4,427,586,820 cubic feet, and is sufficient in bulk to build a wall around London of 200 miles in length, 100 feet high, and 41 feet 11 inches in thickness; a mass not only equal to the whole cubic contents of the Great Wall of China, but sufficient to add another 346 miles to its length.

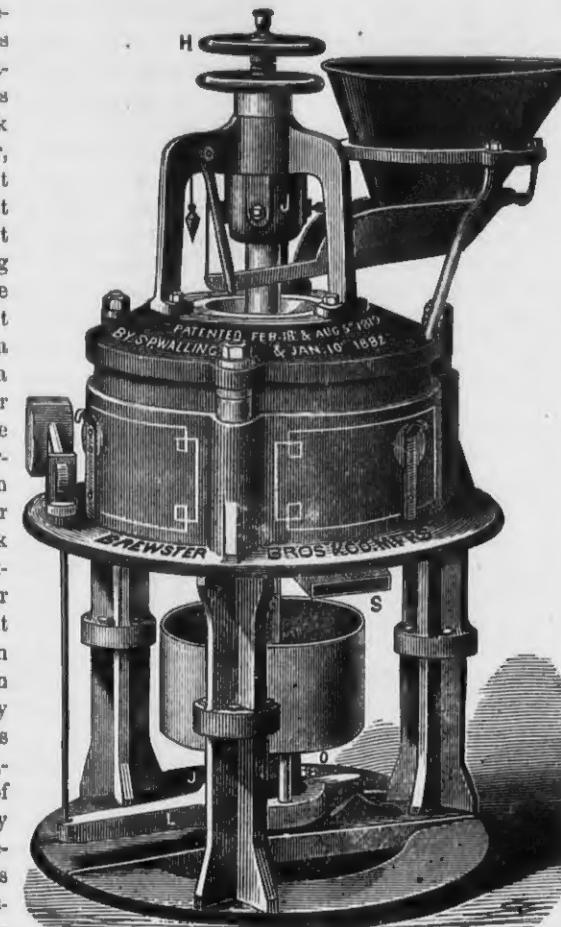
These imaginary coal structures can scarcely fail to impress the mind of youth with the enormous consumption of coal; and when they are told that in many of its applications the useful effect obtained is not one-fifth of its theoretic capabilities, they will be enabled to form some idea of the vast importance of the economic problem which calls so loudly for solution.

MESSES. HULBERT & PAIGE have recently issued the following circular, which explains itself:

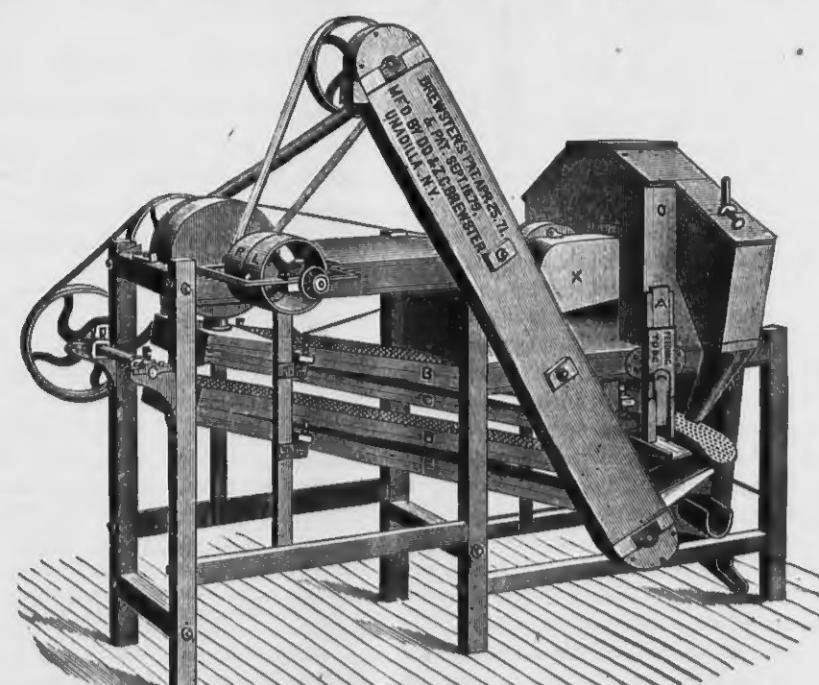
PAINESVILLE, O. May, 1, 1882.

On and after this date the firm of Hulbert & Paige will be known, and the business conducted under the name of THE PAIGE MANUFACTURING COMPANY. Please note the same on your books. Soliciting your good will and continued patronage for the Company, we remain

Yours Very Respectfully,
HULBERT & PAIGE.



POSITIVE ADJUSTMENT AND AUTOMATIC MIDDLING MILL.



BREWSTER'S CELEBRATED BUCK-WHEAT REFINER.

turned to the buhrs, thus preventing waste of any buck-wheat, wet or dry. The manner in which the buhrs are set, controls the amount of returns at any time, but it is better to have some to return constantly as then no waste occurs from the aspiration, whether the grain is wet or dry, and yet it leaves it much coarser, and the coarser the better on account of shrinkage.

The next grade of products are the coarsest meats which are exposed to another separate air current, while spread out on the sieve where they are easily purified without waste. Each grade is treated in a similar manner with its separate blast of air, and the reader will readily perceive that the work is done

illustrations will at the same time be of value as showing the magnitude of our own coal trade.

It is only when the mind can fairly grasp the magnitude of our coal consumption that the importance of its economy can be fully realized. The statistics of the coal trade show that during the year 1881 the quantity of coal raised in Great Britain was no less than 154,184,800 tons. When the eye passes over these nine figures, it does not leave on the mind a very vivid picture of the reality—it does not say much for the twelve months of incessant toil of the 495,000 men who are employed in this vast industry; hence I have endeavored in a pictorial form to convey to

THE UNITED STATES MILLER.

(Continued from front page.)

sideways by four adjustable babbitt boxes. In the bottom of the pot, opposite the diagonal hole in the square button is placed a plugged drain-pipe by means of which the babbitt grit and gummy oil can be removed at any time.

The cogs of the core wheels ought to be kept tight and must be doped once a week with a mixture of beeswax, tallow and plum-bago. Treated in this manner they will work with little friction and will last a great length of time.

Transmission of power ought to be effected wherever possible by belts. The "old-fashioned upright," driving upper mill machinery ought to be replaced by a belt. In this I agree perfectly with Mr. Abernethy, the author of "*Practical Hints on Mill Building.*" Even when core-wheels are employed to stop the noise of the gearing connected with such upright, power in friction is lost as the friction between iron and wood, well lubricated, is about a third greater than between iron and iron under similar conditions. Remember that this holds good also in roller-mills in which the mate roll is driven by core-spur. Owing to the great friction the loose roll will be crowded off severely by each cog. The power lost in overcoming the belt stiffness is about equal to the power lost where core-wheels are used to do the same work.

I do not favor double belts, and always prefer to use fast-running single belts over large pulleys—in order to reduce the loss of power produced by bending the stiff double belts, and also in order to save on first cost. I do not hesitate to run belts up to a velocity of a mile per minute. Belt-tighteners ought to be avoided wherever possible, as they are destructive to the belts, and increase the loss of power. They are generally pulleys with short curvatures, and increase the power-loss enormously, especially when applied to double belts.

On upright belts, tighteners must be used to press the belt against the lower pulley. Slow-running shafts, such as elevator shafts, shafts driving the bolting chest uprights, etc., cannot well be driven by belts without using very large pulleys and belts which is not advisable.

To increase the "life" of leather belts, and to diminish the loss of power resulting from belt-stiffeners, they should be oiled once a week with castor-oil or glycerine. A little glycerine on dry belts frequently "works wonders." They will hug the pulley better and need not be so tight, and will then save frictional loss in the bearings, and also the consumption of lubricators.

About two years ago rawhide belts were introduced into flour mills. They were used principally for driving the roller machines. Those machines generally have small pulleys—not larger than 30 inches, nor smaller than 12 inches in diameter, and pliable belts are especially desirable for driving such machines as Gray's roller mills. The driving belts of those roller mills are bent in two directions right along, and the thicker and the stiffer the belts, the more power is lost by bending them in following the curvatures of the four pulleys over which they pass. Rawhide belts would be well adapted for roller mills if they would not stretch so much when new, and get stiff, unmanageable and covered with flour-dust after running a year or less. A great many millers used and liked them very much while new, as they would do the work required of them even when comparatively slack. The miller would patiently re-tighten them until the belts had lost about half an inch in width. When the belts became too stiff and actually brittle, oiling was resorted to, but the oil would not penetrate through the flour-paste coat which had grown on or into the belt. So, rawhide belting was gradually replaced by strong, single oak-tanned belting.

In modern mills the wheat is divided into many different components, which must all be treated separately, and consequently a great number of elevators become necessary.

If the wheat elevator, sending the wheat into the mill as fast as it can be taken care of by the machinery, has a seven inch belt, and we assume that the partly finished and finished stuff, swells in size three times, that all the stuff is elevated four times, besides the spouting and conveying, then the sum of the widths of all other elevator belts ought to be 12 times 7, or 84 inches.

Now, I cannot plan a mill with less than 22 elevators, and frequently my mill plans have from 25 to 28 elevators—average width of belt is 4 inches; thus a mill with 27 elevators will contain say one 7 inch belt wheat elevator, twenty-six 4 inch belt elevators, besides the spouting, equal to 104 inches in width.

The surplus of belting for handling stuff in the course of being finished, and finished

stuff comes from the necessity of employing belts at least 8 inches wide, also from the desire to have all elevators for intermediate work provided with wider belts than absolutely necessary to carry up a given weight. This is done to prevent "choke ups." The wider belts will carry even if they are a trifle slack, and it is better for a mill to be fed insufficiently than to be prevented from delivering the manufactured product. There are too many elevators to be looked after in a modern mill and one cannot afford to employ too narrow belts. The belts being wider than actually necessary in order to carry along the stuff easily, and therefore having but little tendency to stretch, it is advisable to use cotton belts for middlings, flour and bran elevators. The friction between cotton and iron is greater than between leather and iron. The adhering flour-dust also increases the grip on the pulley, and cotton belts being pliable hug the pulley well, and they are also cheaper than the poor light leather belts generally selected for elevators. For wheat and "break" elevators it is advisable to use good leather belting, as cotton wears out too rapidly when brought in contact with the sharp broken wheat kernels.

Elevator cups ought to be banded around the opening, for the wear takes place at the front edge of the cups. The SALEM cup, otherwise a strong and substantial cup, will soon get as sharp as a knife, and wear down at the front edge, losing capacity. A good strong cup is made by L. J. Mueller at Milwaukee, Wis., who indeed takes great care to turn out a cup showing unquestionable good workmanship, which he sells at a reasonable figure. His NORTHWESTERN cup is strongly banded and will last.

Elevators always ought to be perpendicular, with head and boot pulleys of the same diameter. It is advisable to make those pulleys 20 inches in diameter, and better yet, 24 inches. One can thus easily pass between the legs of a whole row of elevators, a feature which cannot be too highly esteemed.

Never put an elevator boot on the grinding floor, as it will obstruct the passage needed; put the boot intended to stand on the grinding floor in the basement below the joists. You can spout equally as well into the front of the boot (the ascending side) as into the back and sides of the boot; in the latter case the millwright must be careful to enter the boot high enough, so that the cups will scrape away the discharge from the spout; if the spout enters too low down, it will inevitably clog. I have found that elevators carrying wheat are often run so fast that they "carry back" considerably, and I have, guided by my experience, made the following table of speeds at which the elevators will discharge well. The cups are assumed to be 16 inches from underside to underside.

Diameter of pulley.	Maximum Revolutions.	Maximum belt speed in feet.
24 inches	44	276
25 "	46	315
28 "	47	344
30 "	47	370
33 "	48	410
36 "	47	441
40 "	46	480
48 "	43	538
54 "	40	560
60 "	37	580
66 "	35	600
72 "	32	600

The larger the pulley, the better chance will the cups have for discharging. Middlings and flour being more bulky and lighter than wheat, will not be discharged so readily as wheat. Middlings, flour and bran elevators, if 20 inches in diameter, ought not to run faster than 42 revolutions; if 24 inches in diameter, they should not be run faster than 40 revolutions. The shafts for elevators ought to be made extra-heavy and boxes placed 5 or 6 feet apart; there is considerable weight suspended on the shaft and the torsional strength, generally taken into account in shafting, must be but little regarded when the thickness of the elevator shafts are calculated. The lateral strength of the shaft, is taxed far more than the torsional.

For the benefit of the millwrights reading this, I will give a reliable list of shafting theoretically and practically tried. I computed it and made it short and easy.

SPEED OF SHAFT, 100 REVOLUTIONS PER MINUTE.

1½ inch rolled shaft transmits	5 horse power.
2 "	7 "
2½ "	11 "
2¾ "	14 "
3 "	17 "
3½ "	25 "
3¾ "	35 "
4 "	40 "
4½ "	50 "
5 "	55 "
5½ "	60 "
6 "	65 "
6½ "	70 "
7 "	75 "
7½ "	80 "
8 "	85 "
8½ "	90 "
9 "	95 "
9½ "	100 "
10 "	105 "
10½ "	110 "
11 "	115 "
11½ "	120 "
12 "	125 "
12½ "	130 "
13 "	135 "
13½ "	140 "
14 "	145 "
14½ "	150 "
15 "	155 "
15½ "	160 "
16 "	165 "
16½ "	170 "
17 "	175 "
17½ "	180 "
18 "	185 "
18½ "	190 "
19 "	195 "
19½ "	200 "
20 "	205 "
20½ "	210 "
21 "	215 "
21½ "	220 "
22 "	225 "
22½ "	230 "
23 "	235 "
23½ "	240 "
24 "	245 "
24½ "	250 "
25 "	255 "
25½ "	260 "
26 "	265 "
26½ "	270 "
27 "	275 "
27½ "	280 "
28 "	285 "
28½ "	290 "
29 "	295 "
29½ "	300 "
30 "	305 "
30½ "	310 "
31 "	315 "
31½ "	320 "
32 "	325 "
32½ "	330 "
33 "	335 "
33½ "	340 "
34 "	345 "
34½ "	350 "
35 "	355 "
35½ "	360 "
36 "	365 "
36½ "	370 "
37 "	375 "
37½ "	380 "
38 "	385 "
38½ "	390 "
39 "	395 "
39½ "	400 "
40 "	405 "
40½ "	410 "
41 "	415 "
41½ "	420 "
42 "	425 "
42½ "	430 "
43 "	435 "
43½ "	440 "
44 "	445 "
44½ "	450 "
45 "	455 "
45½ "	460 "
46 "	465 "
46½ "	470 "
47 "	475 "
47½ "	480 "
48 "	485 "
48½ "	490 "
49 "	495 "
49½ "	500 "
50 "	505 "
50½ "	510 "
51 "	515 "
51½ "	520 "
52 "	525 "
52½ "	530 "
53 "	535 "
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63½ "	640 "
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64½ "	650 "
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65½ "	660 "
66 "	665 "
66½ "	670 "
67 "	675 "
67½ "	680 "
68 "	685 "
68½ "	690 "
69 "	695 "
69½ "	700 "
70 "	705 "
70½ "	710 "
71 "	715 "
71½ "	720 "
72 "	725 "
72½ "	730 "
73 "	735 "
73½ "	740 "
74 "	745 "
74½ "	750 "
75 "	755 "
75½ "	760 "
76 "	765 "
76½ "	770 "
77 "	775 "
77½ "	780 "
78 "	785 "
78½ "	790 "
79 "	795 "
79½ "	800 "
80 "	805 "
80½ "	810 "
81 "	815 "
81½ "	820 "
82 "	825 "
82½ "	830 "
83 "	835 "
83½ "	840 "
84 "	845 "
84½ "	850 "
85 "	855 "
85½ "	860 "
86 "	865 "
86½ "	870 "
87 "	875 "
87½ "	880 "
88 "	885 "
88½ "	890 "
89 "	895 "
89½ "	900 "
90 "	905 "
90½ "	910 "
91 "	915 "
91½ "	920 "
92 "	925 "
92½ "	930 "
93 "	935 "
93½ "	940 "
94 "	945 "
94½ "	950 "
95 "	955 "
95½ "	960 "
96 "	965 "
96½ "	970 "
97 "	975 "
97½ "	980 "
98 "	985 "
98½ "	990 "
99 "	995 "
99½ "	1000 "

This table can easily be memorized up to 4 inch shafting. Whatever the shaft runs more or less than 100 revolutions can be easily proportioned.

EXAMPLE: A 3½ inch shaft makes 150 revolutions per minute, how much power will it transmit?

A 3½ inch shaft at 100 revolutions as seen in the table above, transmits 40 horsepower; then 3½ at 150=40 plus ½ of 40=60 horsepower.

EXAMPLE: A 4 inch shaft running 40 revolutions per minute, will transmit how many horse power?

A 4 inch shaft at 100 revolutions transmits 60 horse power, at 40 it will transmit forty-one-hundredths, or four-tenths of 60= to 24 horsepower.

For elevator shafts figure as follows—The line runs 40 feet, twenty-eight elevators, with belts averaging 4 inches in width, are on the line. Estimate 4 elevators to one horsepower and altogether the 28 elevators require 7 horsepower. Double this, and the question to be answered is, how thick must the first length of shaft be to drive 14 horsepower at 40 revolutions per minute? The answer is; a shaft running 40 revolutions and driving 14 horsepower will drive 2½ as many, or 85 horsepower if revolving 100 times per minute. Our table gives us 3½ inches; that is the diameter of the first length. Towards the other end, this diameter can be decreased to 2½

NOTICE!

All matters which have been in litigation between our companies have been adjusted on terms which are mutually satisfactory.

The firm of Huntley, Holcomb & Heine, sell and assign all their patents relating to Purifiers and Dust Collectors, both in the United States and foreign countries, together with the good will of their purifier business, to the Geo. T. Smith and Consolidated Middlings Purifier Companies, receiving license to use all machines heretofore sold by said firm, and also license for a limited number of machines to be manufactured. With the patents, the Consolidated Middlings Purifier Company also acquires all rights of action which may have accrued under any of said patents.

It is intended in this settlement to protect and perfect the rights of all purchasers from either Company in the use of their machines as they exist. (Signed)

Consolidated Middlings Purifier Co.,
Geo. T. Smith Middlings Purifier Co.,
Huntley, Holcomb & Heine.

New York City, May 9th, 1882.

The Various Processes of Grinding.

FROM EMERICH PEKAR'S REPORT TO THE HUNGARIAN GOVERNMENT.

(Translated from the *Ungarische Muehlen Zeitung* of Vienna, Austria, for *The Miller*, London.)

Continued from April Number.

The break with the low-grinding system, or rather the first deviation from it, occurred, as already pointed out, in the beginning of the present century in the French "mouture économique" and in the "mouture ronde," practiced in Saxony, Bohemia, and more especially in the Vienna district, where, in grinding the hard Hungarian wheats, this system originated in the second half of this century from insignificant or accidental circumstances, when Pauer began to purify the middlings in a machine instead of on a hand-sieve, and consequently obtained thereby more middlings. In Austria and Bohemia the system of middlings milling was continued up to and past 1850, the wheat being damped to toughen the bran. The task of introducing the process of gradual and consecutive breaking of the wheat in order to make middlings, and from them flour, was reserved for Hungary. In 1821 Helfenburg, of Rorschach, Switzerland, attempted to supersede the cutting and pounding action of the stones by the pressure of revolving iron rollers, an idea further developed by various other parties, but only brought into practical working operations when the Swiss engineer, Sulzberger of Zurich, constructed his roller mill. Count Stefan Széchenyi, whose foresight, as it now appears, grasped the future established in 1839 the Josef's Roller Mill Company in Budapest, which met with the most bitter opposition and loss from the hostility shown to it by the Pest and Ofen Miller's Guilds and the mistrust of the public. In this mill the Sulzberger rollers were used, and these very rolls are at the present time at work in the old mill of this still flourishing concern, the "Pester Walzmühlen" Company.

In several places abroad mills were built on Sulzberger's system, but gradually disappeared. Most of the rollers were bought up by the Budapest mill, and with these rolls the above-mentioned gradual reduction and making of middling previously referred to

were commenced. The cause of the adoption of this system exists in the steely nature of our wheats, ripened by the hot sun of our rich Alföld district. Shortly afterwards, in 1842, the Josef's Walzmühle, of Budapest, was followed by the establishment of the "Istvan" Roller Mill in Debreczin, which after overcoming many difficulties, became a most flourishing concern under the untiring care and able management of Emerich Komlossy and Josef Csank. The employment of rollers thus showed the way of removing the bran from the steely wheats. An important step now followed in Austria, Bohemia, Switzerland, and chiefly in Hungary, where the roller process continued more and more to supplant the stones. The Hungarian miller, Johann Blum, of Ofen, was the leader in this progressive movement, followed by Heinrich Haggenmacher, at that time foreman in Barber and Klusemann's mill (now the Louise), and who later on became proprietor of a mill. On the basis of this process numerous large mills were established in Budapest and the provinces in the course of the decade from 1860. The process thus created was further developed. Already, in 1873, Ganz's works in Budapest turned out roller mills based on Wegmann's fundamental idea, and further extraordinarily developed by Mr. Mechwart. Karl Haggenmacher invented a middlings purifier superior to anything known until then in respect to the perfection of its work and capacity, and he brought the arrangements of the mill to a more organized system. George Rieger was the pioneer of the new roller mill arrangements, which he introduced under great responsibility, but with brilliant success. The late Josef Ullmann was also a pioneer in the sense that he opened up a market for our flours in distant foreign countries. This resulted in the development of the manufacture of the necessary machinery, and where, in 1860, and even at the beginning of 1870, we were compelled to go to Austria, or even further, for our machinery, we now produce our own, and export besides a considerable quantity, for wherever our flour appears its excellence and freedom from bran testifies to the superiority of our system and its arrangements.

Leaving the minor and less important arrangements out of the question the numerous processes of manufacturing flour prac-

ticed in the different countries may in reality be divided into two chief processes and a third one branching from them. The countries which originally grew soft floury wheats developed and perfected at an early date the system of a single reduction, further necessitated by the damping of the grain. At the most the small quantity of fine middlings made in this process had to be reground. This practice was universal in the West of Europe, in fact it may be said in the whole world, and at the present day it is still retained. The results intended to be got by the single reduction were one grade of finished flour of from 70 to 72 per cent. from 100 lbs. of wheat. The famous "Eight Marks" flour of Paris is produced on this system, and the French firm of millers, Darblay, who are reckoned among the largest in the world, make at present one grade of flour about 69 to 70 lbs. of flour out of 109 lbs. of wheat. The six pounds produced beyond this divided into two other grades cannot be considered as a commercial article, as it is deficient both in quality and quantity.

In Great Britain efforts were made to extract a larger percentage of flour from the wheat. The native wheats there are comparatively poor in gluten, the flour is weak, and, consequent on the system of grinding, they contain bran.

The second principal system, a slow grinding one, as necessitated by the nature of the wheats, with brittle brans and steely endosperm, in the countries adopting it, was the middlings milling, high or Hungarian system of grinding, which was only developed at a later period on account of the difficulty in producing flour free from bran, but in its results it surpassed the other systems in an unexpected manner. The products of this system consisted originally of four to five, afterwards of seven to eight, and at present of eleven grades of flour, all differing materially from one another, as regards their freedom from bran and other properties. The wheat which required this mode of treatment is the finest in the world, rich in all the essential components, gas, gluten, and salts; and the flour, apart from the absence of bran in it, is white, pure, and at the same time the strongest and most nutritive.

The third process is of more modern date, and is termed half-high or half-middlings grindings. In the development of this system, the quality of the wheat and the character of the demand from the consuming centres, were modifying influences, both of which are apparent in the system as now developed. In some states of the North American Union, where a hard steely wheat similar to the Hungarian was grown, the price of this fine variety was continually lower than that of the soft wheats, because the flour was dark on account of the brittle bran. The same was likewise the case in greater or smaller districts of other states. When the Hungarian flours, made from similar wheats, were shown in the markets and exhibitions of the world, the attention of interested parties was drawn to them, and our system of grinding was adopted in its entirety in Russia and Galicia, while in Minneapolis, the central point of the Northern States of the American Union, the imitation of our process of gradual reduction began just after 1865. They call it sometimes patent process, or Hungarian process and by the importation of our roller mills they made further progress. We therefore find that the half middlings milling, which originated in Budapest, has been introduced to a greater or less extent in all quarters of the world.

The flour thus obtained does not equal in quantity that obtained in low grinding, but it is a fact that our system of middlings milling has spread over the whole world, and at present is being used in part on soft wheats with excellent results. I call this system half-high or half-middlings grinding for this reason, that neither in Germany, England, or America especially, has our exhaustive and costly process been adopted in its entirety. To indicate only one country as an example, the United States could not adopt our system, because there is no sale there for the dark flours, represented by our numbers, 7, 8, 8½ and 8¾, for the rich and the poor alike are accustomed to a white bread, and the flour is intended to supply the requirements for white bread and not for pastry. This demand is satisfied by the production of three grades, as is now the case in Minneapolis, for example and in them partially darker grades are sometimes mixed, though not to any great extent. Another reason why middlings milling flourished there only to a certain degree, is the fact that the public, influenced by the quality of the wheat, have been accustomed to one old straight grade of flour, and

therefore this custom had to be taken into account, as of the greatest importance in producing this grade of flour by another system. From local reasons, it is consequently not to be supposed that the Americans will make as many grades of flour as we do, but, unfortunately, it is only a question of a very short time for their flour to equal ours in purity and excellence. To the third or half-high system of grinding, the old French system of reduction by several operations may be said to belong, by which the semolina for the manufacture of macaroni, is produced from hard wheat, and forms a specially flourishing branch of industry in France.

(To be continued.)

Grain Speculation.

CORRESPONDENCE BETWEEN A NEBRASKA LAD AND HIS CHICAGO UNCLE.

[From the Chicago Tribune.]

LINCOLN, Neb., April, 1882.—MY DEAR UNCLE JOHN: I have not forgotten your visit to us last fall, when you came to look after the stock on your ranch. Hope I shall be home when you come again. I have wanted to talk with you about a very particular matter, and concluded to write. You remember my sorrel colt that Pa gave me to raise? Well last month I sold him for \$100, and have got the money. The man who bought him has his perfect mate, and would not take \$125 for him. I want to make money; and you said once, it takes money to make money; and so I sold him, though Pa said I would do better to keep him. I know where I can get two young colts for \$100—or eight nice calves—or quite a herd of sheep with lambs; and Pa says I can keep them free if I will go out to the farm twice a week to look after the stock. But it seems a long time for colts and calves to grow up, and I want to make money quick—like young Mr. Drake who comes out here from Chicago. They say he makes \$200 or \$300 in a day sometimes, speklatin' in grain. That's a long sight better than putting out \$100 a whole year for \$6 or \$8 interest. I know you deal in grain some way, and Ma says you have made money in that business.

Now, I thought it would be the best thing for me if I could get you to take my \$100 and speklate for me. I think by what Ma said you could do it 'most as well as not. Steve Ashley—he's older than me, and the smartest boy round here—he says they don't pay all up for the grain, but only a margin, say five cents a bushel; and that my \$100 would buy 2,000 bushels of grain; and that if it went up five cents a bushel, I would make \$100. He ciphered it all out for me, just like a sum in arithmetic. I hear that it sometimes goes up 10 cents a bushel, and that would be \$200. I havn't said nothing to Pa about this, because he talks against speklatin'—says it's like gambling.

I don't know which is best to buy—wheat or corn. I tried by mixing some on a board, and scraped off some with my eyes shut to see which was ahead. My luck was on corn 'most all the time.

Steve says you don't have to take the grain you buy—only settle when the time is up and take the profit. I think that is the neatest business I ever heard of, and mean to follow it when I am a man. I want to send the money now; but Ma says, wait till I get your answer.

I 'most forgot to tell you, the boys all play the new game you taught me. Most of the boys play marbles for "keeps" on the sly, because teacher don't allow it. I lost all mine last week, and don't play any more, because I don't think it's right.

Hoping to hear soon, I am your affectionate nephew.

JAMES BURNS, JR.

P. S.—Steve says young Drake has lost money lately speklatin', because he bought too high and sold too quick. I don't think it was very smart to do that. I wouldn't do it, you know.

CHICAGO, April, 1882.—James Burns Jr., Lincoln, Neb.—MY DEAR NEPHEW: This is my first opportunity for answering your interesting letter, which came several days ago. I am much interested by it, and will endeavor to answer it faithfully. So you have sold that fine sorrel colt, and have \$100, and want me to advise you, or help you to use it. Now, your modern business-man prides himself on being able to say No, in such a way as to please almost as much as if he said Yes. To do this with you may require a long letter. There may be forty reasons why I should not grant your request. First, your chance to loose is greater than to make. If you should loose while I was your broker my next visit would not be so pleasant.

THE UNITED STATES MILLER.

It is true I am in the grain business, but not in a gambling way. I send agents and money to country towns to buy grain and ship it here, where it goes into one of those great elevators to be loaded on vessels for the East. All this is properly business, and as necessary to be done as to raise grain on farms. But to sell what you don't possess and don't expect to receive, is not necessary, or useful in any sense.

I will try to show you the difference between the two ways of trading.

We will say, for example, that the crop of corn in the country is 10,000,000 bushels, and that the market price is 50 cents per bushel—total value \$5,000,000; but that, before any of it was used or shipped abroad, the price rose to 75 cents a bushel. The aggregate gain to farmers and dealers on advance would be \$2,500,000; which is a legitimate gain in money to the country. If this advance in the price was caused by general short crops and scarcity in provisions, so that the \$7,500,000 received for the crop would not buy so much other commodities as \$5,000,000 had done the former year, then, though an apparent gain, is in reality a loss to the country and the cause of harder times, though some individuals may have grown rich on the advance from 50 to 75 cents. Advance in prices does not always bring better times.

I think you are bright enough to see that an advance of 25 cents a bushel on 10,000,000 bushels of corn amounts to just \$2,500,000, and cannot by any honest figuring be made anything else; but I know many men who consider themselves bright, who believe that an advance of 25 cents a bushel on 10,000,000 bushels of corn may be made to amount to \$10,000,000, or even \$40,000,000 or \$50,000,000. I will try to show you how they do it. They do not do it by buying and selling grain, but by pretending to buy and sell grain—some of them selling what they don't possess and cannot get, and some buying what they know cannot be delivered and what they do not expect to receive.

You can see in the case suppose that \$2,500,000 is an actual gain in money to the country, and all the actual gain there can be on the 10,000,000 bushels at 25 cents a bushel. Every dollar of gain beyond that on the crop of that grain is not made out of the grain, but out of each other—that is, all that one man or set of men make in this way must be lost by some other man or set of men. That is exactly the case in all kinds of gambling—all the gains of one player must be losses to another. It is like playing marbles for keeps; you understand that.

In these fictitious deals in phantom grain, the gainer and looser do not trade together directly; if they did, each would know who gained what he lost, or lost what he gained, and future meeting on the street would not be so pleasant. But the trades are made through a broker, so that the parties who lose and gain do not know each other. Brokers call this kind of trade dealing in options; which means that the seller has the option to deliver the grain, or settle the loss or gain, and that the buyer has the same option. It is well understood on both sides there is no real grain in the business.

This is the kind of trading you wish for, you may say. It is wrong for one to sell what one does not own and cannot deliver. But if you wish to buy what you don't want to take, you must buy of one who doesn't want to deliver. One is as bad as the other, and both are mere *bettors*, instead of buyers and sellers.

I attended a church-society meeting a few years ago, when the pastor advised a few of his leading men to "take a venture in wheat on the Board of Trade" for the benefit of the church; and some of them seriously thought of doing it. Wheat had been going up; some thought it would go higher—some thought it would decline. Now, suppose that six of these men had agreed to try their luck for the benefit of the church in an equal amount "on options"; and that three had sold 10,000 bushels each, believing it would go down, and three had bought 10,000 bushels each, believing it would go up. At the end of the month wheat had gone down 10 cents a bushel, and the three sellers were entitled to \$1,000 each, while the three buyers had lost \$1,000 each. The three winners had the credit of giving \$3,000 to the church; but the money came from the three losers. If they had all bought they would have lost \$6,000, and if they had all sold, they would have gained (not made) \$6,000—but they would have gained it from the poor fellows they pretended to sell to.

I know a broker who is assistant manager in our Sunday-School. He advertises that he has fitted up his rooms especially for the ac-

commodation of ladies who wish to speculate in grain privately. I presume he would serve boys also, if they are good boys and belong to the Sunday-School.

I want you to get this principle well fixed in your mind—namely: that all trades in which the gains on one side come and must come from losses on the other side, are gambling. All true trade is an advantage to both sides. The farmer sells his grain because he wants money to put into growing stock or crops; the buyer expects to make a profit for his trouble and money; the miller, starch-factory, and glucose-factory expect to make a profit on their skill and labor, and so on.

If you will come to Chicago with your \$100 you can have a choice of several ways to make or lose money quickly. You can buy tickets in lotteries; or you can bet it on games of chance; or you can find "bucket-shops," where you can bet what the price of any kind of grain will be next month or next week, or in the afternoon, or to-morrow. Any one of such games or "deals" is just as moral and harmless to yourself and your neighbor as the other. All you may make in either some one must lose. Or, if you don't like the look or smell of the bucket-shops, you can find a respectable broker in a nice office, who will conduct your "bucket-shop trade" on the great Board of Trade. A better, more wholesome, moral sentiment begins to appear on this subject. Some of the states have always protected gambling and lotteries by law. Now advertisements of all such schemes are excluded from the mails. Many states have tried to prevent "commercial gambling," but so far without success. But the world moves, and efficient laws to correct these evils will be made and enforced, so that transactions now engaged in by Christian men will sometimes be punished. Already shrewd business men who indulge in these speculations will not excuse it in others. Your father is right. If he speculated in the way you want to, and wholesale merchants here with whom he trades knew it, they would not give him credit for a day. There is not a bank-cashier in the country who could keep his place if it was known he speculated in grain. My advice is: Invest your money in colts, calves or sheep. You will gain more to let the lambs gambol on the prairie than to turn lamb yourself and gamble on the Board of Trade.

Faithfully, YOUR UNCLE JOHN.

Kentucky Millers' Association.

The Kentucky Millers' Association held their regular annual meeting in Louisville, Ky., May 4. The meeting was held in an apartment furnished by the Louisville Board of Trade. The following officers of the Association were present: W. M. Potts, Richmond, President; John E. Miles, Frankfort; Wm. Shaw, Paris; S. C. Kerr, Winchester and L. H. Nottagle, Lexington, Vice-Presidents, and W. G. Proctor, of Danville, Secretary and Treasurer.

The members of the Association were entertained with a brief address of welcome by Mr. Chas. Ballard, which was appropriately responded to by Mr. W. E. Grubbs, of Shelby City, Ky.

The roll was then called and the following delegates responded to their names: W. E. Grubbs, Shelby City, W. N. Potts, Richmond; W. G. Proctor, Danville; J. W. Gilbert, Owensboro; J. W. Hackett, Louisville; C. C. Marble, Eminence, William Watts, Jessamine county; Lewis Rose, Hamilton, O.; C. T. Spillman, Paint Lick, Ky.; J. H. Spemewarter, Laurel, Ky.; B. Collins, Elizabethtown; E. O. Marnott, Long Grove, Ky.; A. Weisenberg, Payne's Depot; W. H. George, Dayton, O.; J. W. Zaring, Shelbyville; H. P. Edward, Hamilton, O.; D. H. Ranck, editor *Millstone*, Indianapolis, Ind.; C. F. Hall, editor *Grain Cleaner*, Moline, Ill.; John Dishman, Bowling Green, Ky.; J. E. Miles, Greenville, Ky.; A. W. Robinson, Grahamton, Ky.; Jas. Colt, Henderson, Ky.; Geo. W. Mullen, Whitesville, Ky.; W. H. Wherritt, Lancaster, Ky.; Jno. T. Rabbeth, Hopkinsville, Ky.; R. A. Gordon, Louisville, Ky.; S. P. Kerr, Winchester, Ky.; J. N. Miles, Frankfort, Ky.; J. D. Combs, Memphis, Ind.; Chas. A. Winn, Indianapolis, Ind.; F. Compton, Frankfort, Ky.; I. E. Eubank, Frankfort, Ky.

The minutes of the last meeting were then read and approved, and the President delivered his annual address as follows:

GENTLEMEN OF THE KENTUCKY MILLERS' ASSOCIATION: After another year has passed and gone, with all its vicissitudes, I trust and hope this convention will join me in returning gratitude to the Ruler of the Universe for permitting us to again meet under so favorable circumstances. And then I feel and think every member of this convention will join me, that it would be ungrateful in

us not to feel deeply thankful to the good citizens of our metropolis for their many acts of kindness extended to us. Louisville, the pride of our State, I must be allowed to say, I am proud of her, and I think every heart will throb in unison with mine when reading the history of her, and then witnessing what she is to-day. I have been here when the population was only ten thousand. I saw beech trees grubbed up where our beautiful Broadway now is, with its many handsome residences, or, I should say, palaces, and the huge proportions of depots and machine shops of our system of railroads that bind our beloved South in ribs of steel. I feel proud of Louisville. It may be a weakness but I am not ashamed to confess it. Gentlemen, millers of Kentucky, we have met here, from, I hope, all parts of the state, entire strangers; and this is the strangest part that we are strangers, and I hope we will not long remain so to each other. We have met to get acquainted and confer for our mutual benefit; to tell of our wants, prospects, failures and achievements in our business. And I wish to impress on every one present that he, or they, have a work to perform to make this convention pleasant and profitable. I hold that no two intelligent millers can be together an hour without being benefited. Then when we have assembled the wisdom of the Kentucky millers, it appears that it must redound to their interest. At our last meeting there were four committees appointed, to make report at this time and place—one on the New Process of Milling, one on Tariff Rates on Railroads, one on Insurance and one on Grain. I hope those committees have been industrious, and have interesting reports on all those interesting subjects, and then I wish to have a free discussion and get all the information from millers and grain men here, and save time and expense to us, that we will not have all to incur, for at this time, when there is such a great revolution in milling, it would bankrupt any miller to try all the various methods. We can confer with each other and learn from each, I thought twenty-five years since that I knew all about milling, and with all the experience since, I now feel like I know very little, and the little I know I would very much dislike to see you getting at the same expense. Experience is a good teacher, but too costly to be indulged in, and I hope and am satisfied that many, if not all, will leave this convention very much benefited. I have labored for the last four years for our success, and it is in your hands and power to foster and care for it. We have a written constitution and by-laws, and our Secretary will be pleased to furnish every miller, mill-owner or others desiring a copy, and, after examining it to your satisfaction, I hope to have an accession to our forces. I want you to become members. The cost is very trifling in comparison to the benefits; a nominal sum—just enough to defray the necessary expenses. As our deliberations progress, and at the proper time, I want to see a goodly number avail themselves of the privilege of joining our little band of pioneers. I should call your attention to the Millers' National Association and its benefits, but I will leave that to abler hands. The rings have had their day in the North and Northwest. The National Association, an indispensable power to measure arms with the giant, has like the shepherd boy, slain the monster and they will next turn their attention to other fields of labor. And I tell you it will be a day of calamity when they ascertain you are not members of the National Association. Who will fight all your battles, pay all the doctor's bills, and bind up and take care of the wounded. Gentlemen, I feel rather embarrassed under the kind treatment our friends have extended to us on this occasion, and I hope some one will move to appoint a committee to express our sentiments as to the many acts of kindness extended to us while custodians of the Falls City. May she live and prosper and her shadow never grow less. I think it is my duty to call your attention to a few subjects of interest connected with us. I desire there should be a committee appointed on the following subjects: On freight, on railroads and steamboats, on insurance, on milling, and on grain. We have before us a vast amount of labor. We are only now groping our way in darkness. I hope every miller or mill owner present will let us hear from him, give us his experience in mill machinery and his process, whether adverse or prosperous, join the association, enroll his name and post-office, and consider himself at home with us, and help to shape the destinies of our association, and have an influence in fixing the next and all subsequent places of meeting. We want to visit all parts of the State with our annual or called meetings.

The following new members were then elected: McAllister & Salle, Sanford; John White, Madison county; Jones, Ballard & Ballard, Louisville; George Deering & Co., Lancaster; John Dresher, Louisville; W. O. Smith, Louisville; E. Gripp & Sons, Louisville; J. T. McKenzie, Smithville; John Raidt & Co., Louisville; John H. Spillman, Garrard county; Uhhank & Gilbert, Franklin; George M. Mullen, Whitesville; J. E. Mills, Greenville; W. T. Pyne, Louisville; J. G. Kirker, Louisville; C. C. Marble, Lancaster; Rodgers & Russell, Simpsonville.

Secretary W. G. Proctor then made his report as treasurer, showing all debts paid, and a balance on hand of \$6.15.

On motion a committee to revise the by-laws was appointed, with instructions to report May 5th.

The convention then adjourned to meet at 10:30 A. M. May 5th. That hour having arrived the meeting was called to order by President Potts, and after the reading of the minutes the roll was called, only a small number answering to their names. The first business in order was the election of new members, and the following names were proposed and received: Loving, Crutcher & Co., Louisville; W. L. Murphy, Louisville; Kentucky Flour Company, Louisville; J. C. Ameling, Louisville; A. Brandeis & Son, Louisville; G. W. Whipple, Louisville; Verhoff & Scrader, Louisville; W. H. Grainger & Co., Louisville; W. B. Crawford, Harrodsburg.

The next business in order was the election of officers for the ensuing year. Mr. W. C. Smith, of Louisville, arose, and in a neat little speech nominated Mr. Charles T. Ballard, of Jones, Ballard & Ballard, for Presi-

dent. Mr. Grubbs seconded the nomination, and he was declared elected by acclamation. He took his seat at once and thanked the society in a few words for the honor conferred upon him, a new member. The next officers to be elected were four Vice Presidents. The following four gentlemen were elected by acclamation: First Vice President, W. C. Smith, Louisville; second Vice President, W. N. Grubbs, Henderson; third Vice President, W. S. Giltner, Eminence; fourth Vice President, J. N. Meyers, Frankfort.

Mr. Smith then nominated Mr. Proctor for re-election as Secretary and Treasurer, but that gentleman declined to serve, and nominated W. H. Whirritt, of Lexington, who was unanimously elected.

Upon report of the committee, some amendments were made to the constitution and by-laws.

Louisville was selected as the place of holding the next annual meeting on May 6, 1883.

A rambling discussion about wheats, milling machinery and processes was then engaged in of interest to all present. The standing committees on Freight, Milling wheat, Systems of Milling, and Insurance were then appointed by the President.

In the evening a banquet was given the visiting millers and mill-furnishers at Phoenix Hill which was much enjoyed by all present. It seems to be the opinion of all present that the Kentucky Millers' Association will now enjoy a "regular boom"—that the milling interests of the state are roused and that a prosperous and well attended meeting will be held next year.

The Squirrel Problem.

"A squirrel is up a tree and a man on the ground with a gun is trying to shoot it; but the squirrel persists in keeping on the opposite side of the tree from the man. The man walks clear around the tree to the place of starting, the squirrel going about in the same direction and keeping the tree all the time between itself and the man. Now the problem is, 'Has the man been around the squirrel?' He has been around the tree with the squirrel on it, but has he been around the squirrel?"

The Express invited answers to this problem, and received twenty-seven of which fifteen say yes, the man does go around the squirrel, and twelve say no, he does not. A few have sent us their reasons, and two send figures demonstrating the problem. The following answers are printed:

1. Of course the man goes around the squirrel. He goes around the tree and everything on it.

2. Should the squirrel have the start I am of the opinion that the man goes around it.

3. Not by a darn sight does the hunter walk around the squirrel.

4. The man does not go around the squirrel. Might as well claim that—by having a horse attached at A and another at B, each describing the same circle, keeping at opposite sides of circle—the horse at A would at every time going around the ring go around the inside half of B and that B is turned the compliment

A(-----X-----)B
to A in the same manner simply because the outside of one described a larger circle than the inside of the other. In other words a man or horse in describing any circle goes around one-half of himself.

5. The man goes around the squirrel. It is just like a wheel within a wheel.

6. The man does not go around the squirrel. I have tried it and had I got around the squirrel I would have shot it.

7. If there was no tree there and the squirrel was running around in a circle on the ground and the man was going in a larger circle I should say the man went around the squirrel. But when you put a tree there it is different. The man does not go around the squirrel on the tree.

8. The man doesn't go around the squirrel any more than the squirrel goes around the man.

9. Of course the man doesn't go around the squirrel. If I am standing on the nigh side of a horse and start to walk around him, and the horse keeps turning as I go, I am on the nigh side of him all the time, am I not? And I don't go around him if I am on the nigh side all the time, do I? The case is precisely similar to this of the squirrel on the tree.—*Buffalo Express*.

EIGHTY-SIX LOOMS AND 3,376 SPINDLES ARE IN MOTION AT THE JUTE WORKS OF THE DOLPHIN MFG. CO., PATERSON, NEW JERSEY, AND THE FINISHED PRODUCT AGGREGATES 4,144,748 POUNDS PER ANNUM. SIX HUNDRED HANDS ARE EMPLOYED.

Items of Interest.

New Orleans newspapers are inferring great things for the future of that city as a port of export, owing to the completion of a contract recently for shipping 300,000 bushels of grain (700 carloads) from San Francisco to Europe via the Texas Pacific Railway and New Orleans. It is inferred by the *Picayune* that this "is only a foretaste of what may be expected when the wheels of the great southern trans-continental route become lubricated."

AN EXTRAORDINARY SPRING.—In a mine near the busy centre of St. Etienne, a French mining engineer, in boring at a depth of 1,500 ft., is reported to have come upon a hot spring, whose waters rushed forth in a column to a height of nearly 80 ft. above the surface of the earth. It is similar in height and heat to the so-called Stracke Geyser, and is strongly impregnated with carbonic acid. The French Academy of Sciences have determined to send a deputation to examine minutely into the peculiarities of this phenomenon.

WATER POWER.—The town of Saint Etienne, in France, is supplied by a torrent called the Furens, the waters of which are barred by two dams. It is now proposed by M. Conte Granchamps to utilise the water-power to drive small Fourneyron turbines, actuating directly some dynamo-electric machines, with a view to providing Saint Etienne, about 8 kilometers distant (say 5 miles), with both motor force and light. The fall is about 183 ft., and the daily supply is such as to give theoretically some 617 horse-power, of which a well-arranged turbine would receive two-thirds, or 400 effective horsepower. Allowing for loss by conductors, it is estimated that about 200 effective horse-power would be utilized at Saint Etienne.

AN IMPROVEMENT on the Faure secondary battery, recently announced, has almost rendered the former's invention useless. The two metals used in the Faure battery were separated by felt strips, which it was found the acidulated water rotted. In the improved device the outer plate is done away with, and the metal is let into perforations in the other, which is found to give better results and last longer without attention. Mr. Faure is now doubtless sorry that he refused £250,000 for his invention. There is a general agreement between electricians that a successful secondary battery is to play a very important part in the practical adaptation of electricity to every-day uses, not only as a reservoir to supply power, light, etc., but as a regulator of the current.

A GIGANTIC scheme is on foot, said to originate from Mr. Edward Atkinson, which, if carried out, will abolish all the cotton warehouses in the South. It is claimed to be the purpose of the company of which Mr. Atkinson is reported to be the head, to establish ginneries at every accessible point to and on all railroad lines, purchase the planters' cotton in the seed, gin it, and with the use of the Dederic press, press it into bales of 125 pounds, and sell direct to the factories. It is further stated that it is the purpose of the company to secure space in Oglethorpe Park for the erection of gins and presses to manipulate all the cotton coming into the Atlanta market. Should the plan be feasible, a revolution will be wrought in the handling of the cotton crop.

BELTING.—It is economy to put on a wide belt rather than make a narrow one too tight. Vertical belts should be drawn moderately tight.

Prof. J. Bauschinger publishes the result of a series of tests of the tensile strength of different sorts of belting made in the Mechanico-Technical Laboratory at Munich. In making a graphic representation of the results by setting the loads per square inch on a horizontal line and erecting verticals corresponding to the elongations at the different loads, the curves thus obtained show considerable difference for leather, india rubber, and cotton belts. All these materials stretch more at first, with light loads, than afterward. The lines, therefore, are more curved at the beginning, and afterward approach more to a straight line. But with leather belts the approximation to a straight line begins at once, and is more pronounced than with india rubber or cotton belts, showing that they stretch in the beginning more in proportion to the load, and possess a high degree of elasticity. The conclusion drawn from the tests by Prof. Bauschinger is that india rubber and cotton belts are inferior to leather, not only as regards elasticity, but also as regards tensile strength, for the same section, and only attain in strength that of medium or inferior sorts of leather. By cementing and

sewing the ends leather straps lose one-quarter to one third of their strength, if the joints are not made with great care.

Duty of Capital to Labor.

In the course of an article on the above head the *Hartford Courant* says: We shall never be free from the class of ignorant, cheap politicians who seek to advance their own interests by arraying labor against capital, but their power for evil will be greatly lessened when our railroads and our leading manufacturing industries have adopted some system of recognizing and rewarding good service, by means of which each has secured the loyalty of its best men. That this is possible has been demonstrated repeatedly, although it must be admitted, in isolated cases. When it becomes more general, strikes will be rare occurrences; for the better class of laborers will recognize the fact that their employers would not call for reduction in wages if the interests of both employers and employed did not require it. When men know that prosperity for the employer brings an advance in wages without pressure, they will be more ready in a season of adversity to submit to a reduction without grumbling. There is unfortunately too much reason for the common belief that an increase of pay seldom comes until it is forced, no matter how good the times while the first excuse for reduction is improved with celebrity.

Things worth Knowing.

PAINT FOR SMOKE STACKS.—Linseed oil mixed with graphite is said to be a valuable paint for iron smoke-stacks. John Dent of Ore Knob, N. C. says he painted two iron smoke-stacks subject to the corrosive action of sulphurous acid fumes, with a mixture of this kind two years ago and they appear now to be as good as new.

FLOUR PASTE.—Flour, four ounces; water, 1 pint; nitric acid, 40 minims; oil of cloves, 5 minims; carbolic acid, 5 minims. Thoroughly mix the flour and water, strain through a sieve, add the nitric acid, apply heat until thoroughly cooked, and when nearly cold, add the oil of cloves and carbolic acid.

POLISHERS' GLAZE is not a varnish, but finish, applied after the work has been bodied-in in the usual way, and which saves the time and trouble of splitting off—small work especially. It is often applied with a brush, though some prefer a rubber, in which case it should be simply wiped on, and not rubbed. It is made by dissolving gum-benzoin in spirits. Fill a bottle about one-quarter up with the gum, broken small, and then fill with spirits and let it stand a few hours.

THE ECONOMY OF HARD AND SMOOTH ROADS. At a recent meeting of the Engineers club of Philadelphia, Mr. Rudolph Heving, the President presented some notes on the resistance to traction on streets, compiled from various authors who had experimented on the subject, in which he showed that if one horse can just draw a load, on a level, over iron rails, it will take 1½ horses to draw it over asphalt 3½ over the best Belgian, 5 over ordinary Belgian, 7 over good cobble stone, 18 over a bad cobble stone, 20 over an ordinary earth road and 40 over a sandy road.

CEMENT FOR LEATHER BELTS.—For making cement for leather belts, take of common glue and American isinglass equal parts, and place in a glue-pot. Add water to cover the whole. Soak ten hours. Then bring the mixture to a boiling heat, and add pure tannin, till the whole becomes ropy or like the white of eggs. Apply warm. Buff off the grain of the leather where it is to be cemented; rub the joint surfaces solidly together; let it dry a few hours and it is ready for use. If properly put together no rivets will be needed, as the cement is as strong as the leather.

The *American Machinist* says of the above "We have known ten dollars paid for a recipe for cementing belts, similar, but not quite equal, to this."

RUBBER STAMP INK.—The following proportions are said to give an excellent ink, which, while not drying up on the pad, will yet not readily smear when not impressed upon the paper. Aniline red (violet), 90 grains; boiling distilled water, 1 ounce; glycerine, half a teaspoonful; treacle, half as much as glycerine. The crystals of the violet dye to be powdered and rubbed up with the boiling water, and the other ingredients stirred in.

THE STRENGTH OF WOODEN COLUMNS.—Some important tests of wooden columns, says an

Eastern exchange, such as are in common use in the construction of cotton and woolen mills, have lately been made at the instance of Mr. Atkinson, President of the Boston Manufacturers' Mutual Fire Insurance Co. The tests were made with the testing machine at the Watertown Arsenal. The formulas in use for computing the strength of wooden columns are based on tests applied to columns of about two inches on a side and four or five feet long. The new tests were made with columns of pine and oak of the size and length used in actual construction. All but two were round, hollow columns, of from eight to eleven inches in diameter, the two being about nine inches square. The greatest amount of pressure exerted in any case was about 265,000 pounds. The tests have disclosed frequent instances of defective boring in the columns. The object in boring is to open an air passage through the heart of the stick for the prevention of dry rot after it is in position in the building. It is essential of course, that the bore should extend from end to end, but this has not always been effected. The sticks were bored first from one end and then from the other, and the borings have sometimes failed to meet in the middle of the stick. The tests also show that to taper the sticks is a mistake, inasmuch as it weakens the column more than has heretofore been estimated. Reasons for exercising more caution in other respects in the construction and adjustment of wooden columns in buildings have also been disclosed.

"**BEST IN THE WORLD.**"

GARDEN CITY**WHEAT BRUSH!**

Gathmann's patent "inclined bristles" prevents all clogging when the brushes are run close together. This is the

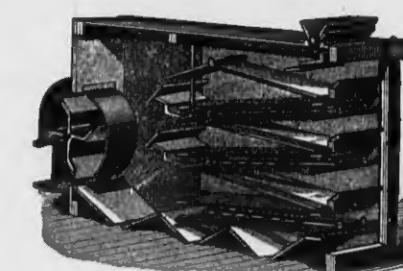
ONLY DOUBLE BRUSH

Which can be set up close so that it will

Thoroughly Brush Wheat.

Guaranteed to IMPROVE COLOR of the FLOUR.

It don't break or scratch the grain. Removes all the dust. Very light running. Send for circular and prices.

Prices Reduced!**Improved Garden City****Middlings Purifier!****With Travelling Cloth Cleaners**

Our improved Purifier has every device requisite to make it perfect, and every one in use is giving the greatest satisfaction to the users. The Cloth Cleaners are guaranteed to clean the cloth better than is done on any other purifier. Send for our new circular.

Over 4000 Garden City Purifiers in use, nearly 500 of which are the Improved Machine.

The Best and now the Cheapest. Write for circulars and price list.

We are agents for the

BODMER**Bolting Cloth!**

Which has long been acknowledged as the best made, and which has lately been further improved, making it now beyond competition. We make it up in the best style at short notice. Send for prices and samples.

Garden City Mill Furnishing Company,

CHICAGO, ILL.

Mention this paper when you write us.

COCKLE SEPARATOR MANUFACTURING COMPANY, MILWAUKEE.

GENERAL MILL FURNISHERS



PLAIN COCKLE MACHINE.

IMPROVED COCKLE SEPARATORS

(Kurth's Patent.) Also built in combination with

Richardson's Dustless Wheat Separators!

Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER.

We will contract to furnish entire Wheat Cleaning Machinery for mills, and guarantee the best results.

Send for Illustrated Catalogue.

WE GUARANTEE GREAT CAPACITY combined with **GOOD QUALITY OF WORK**. Any common Sieve will separate the cockle from wheat but to separate it **WITHOUT WASTE** is the **GREATEST FEATURE** of our Machine. A **WASTEFUL** machine is a **DAILY LOSS OF MONEY** in a mill. There is **NO MACHINE IN THE MARKET** which can stand comparison with ours.

Carbondale, Ill., Dec. 2, 1881.
Cockle Separator Mfg. Co., Milwaukee.

Gentlemen:—Replying to your late favor, would say that we can cheerfully recommend your Cockle Separator as doing all that you claim for it. We have tested ours thoroughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its good work.

Yours respectfully,

BROWN & WINFREY.

Perrysville, Ind., Nov. 24, 1881.
Cockle Separator Mfg. Co., Milwaukee.

Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.

Yours respectfully,

B. O. CARPENTER.

Pott's Patent Automatic Feeder!

Hixton, Jackson Co., Wis., Dec. 30, '81
Cockle Separator Mfg. Co., Milwaukee.

Gents:—In answer to your inquiry of the 28th inst., I would say that the combined machine I bought of you last summer, works to my entire satisfaction.

Respectfully yours,

W. T. PRICE,

per D. G. THOMAS.

P. S.—I have been milling now for twenty-seven years, but never have I seen anything that will equal yours in cleaning wheat.

As an Oat Separator it is No. 1, and for Cockle it cannot be beat. I can take screenings and separate the cockle from it without wasting any of the small wheat. In my opinion every mill in the United States ought to have one, and if I were to build a mill I would have no other. I remain

Yours, etc. D. G. THOMAS.

Minneapolis, Minn. Aug. 22, 1881.
Cockle Separator Mfg. Co.:

We have been using two of Beardslee's wheat cleaners, a scourer and finisher, for nearly two years, and are passing one hundred and fifty bushels per hour through them, one third more than rated capacity, and are not using any other cleaners, and consider our wheat as well cleaned as any in Minneapolis.

Yours truly,

CAHILL, FLETCHER & CO.

La Crosse, Wis., July 30, 1881.

Cockle Separator Mfg. Co., Milwaukee.

Gentlemen:—The Beardslee Grain Cleaner sent me about the middle of June has been in operation since that

time with very satisfactory results. I cannot see that it breaks the wheat or requires an unusual amount of power to run it.

Yours truly,

WILLIAM LISTMAN.

Milwaukee, Wis., Aug. 23, 1881.

Cockle Separator Mfg. Co.

Gentlemen:—The Beardslee's Grain Cleaners which we have purchased from you for our New Era and Milwaukee Mills give us the best of satisfaction. Experienced millers having seen the work done by the machine agree with us, that it cannot be beat. You are at liberty to use our names as a reference, and to any party calling on us we will be pleased to show the machine in operation. Yours truly,

NEW ERA MILLING CO.

The best device for regulating the FEED ON ROLLER MILLS, PURIFIERS, and other machines requiring a regular feed, spread out the full width. Very cheap and simple. Sent on trial upon application. Write for circulars with illustrations. Perforated Zinc of all sizes at low rates. Send for Illustrated Catalogue.

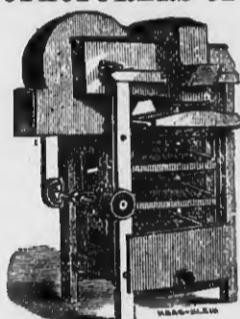
HOWES, BABCOCK & EWELL,

Established 1856.

Silver Creek, Chautauqua County, New York, U. S. A.

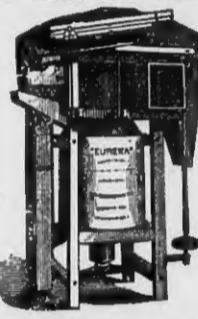
Established 1856.

MANUFACTURERS OF THE WORLD-REOWNED EUREKA GRAIN CLEANING MACHINERY AND SPECIALTIES HEREWITH ILLUSTRATED



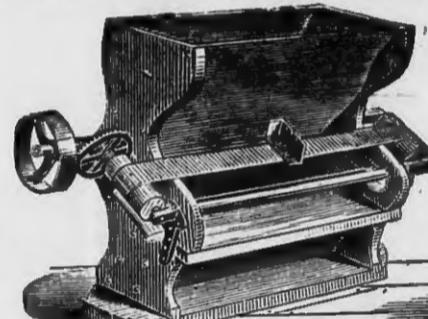
The Eureka Separator

occupies but little space, does its work in an effective manner. Is also built for use in Elevators and Warehouses, with a capacity of from 100 to 1,000 bushels per hour.



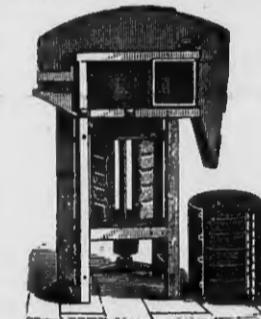
The Eureka Smut and Separating Machine.

A combined Smut and Separating Machine, having thorough ventilation. Over 14,000 of these Machines are now in use.



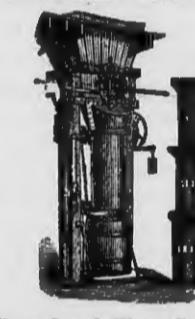
Eureka Magnetic Automatic Separator.

Removes all metallic particles from a flowing stream of grain, requiring no attention from the miller. 5 sizes.



Eureka Brush Finishing Machine

Recognized as the leading one of this class of machines. Universally recommended for finishing the process of cleaning.



Silver Creek Flour Packer.

Will pack whole and half barrels, and half, quarter, eighth and sixteenth barrel sacks. Provided with labor-saving patent crevelling steel coil spring regulating the packing to perfection.

GENUINE DUFOUR AND ANCHOR BRAND BOLTING CLOTHS.

Office and Warehouse in England, 16 MARK LANE, LONDON, E. C.

FULL STOCK ALWAYS ON HAND, MADE UP BY THE AID OF OUR OWN PATENTED ATTACHMENTS, IN A SUPERIOR MANNER.

Ger. Agency for Australian Colonies & New Zealand, THOS. TYSON, MELBOURNE, VICTORIA.

Abernethy's New Book.

PRACTICAL HINTS

ON

Mill Building.

The Latest, Best and Only Exclusively Flour Mill Work in Print.

Every Miller, Millwright and Millwright's Apprentice should have a copy.

THE UNITED STATES MILLER for one year and a copy of this book will be sent for \$4.00. Address,

UNITED STATES MILLER,
Milwaukee, Wis.



BECKER BRUSH.

EUREKA MANUFACTURING CO.,

Manufacturers and Sole Proprietors of the

BECKER BRUSH,

AND

Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

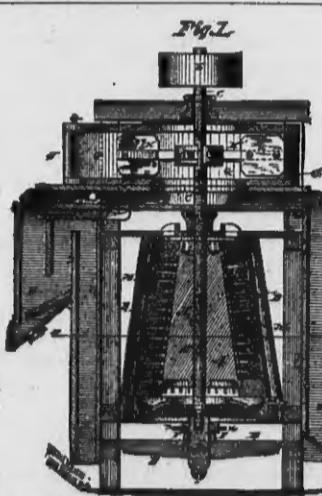
ADJUSTABLE WHILE IN MOTION.

Nearly 1,000 of these Machines in Use.

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

EUREKA MANFG CO., ROCK FALLS, ILL., U. S. A.

[Mention this paper when you write.]



Galt's Combined Brush and Scourer.

HARRIS-CORLISS ENGINE.

—BUILT BY—

WM. A. HARRIS, Providence, R. I.

Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.

The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write us.]

A NEW PROCESS ROLLER MILL!

FOR SALE!

In the City of Milwaukee, known as the "City Mills." Capacity, 250 to 300 barrels per day. Has an established City and Shipping Trade. Mill now running.

For further particulars, address,

ESTATE OF WM. C. DURANT,

"CITY MILLS,"

MILWAUKEE, WIS.

[Mention this paper when you write.]

[Mention this paper when you write us.]

TRADE NOTES.

HURST Bros., Salem, Oregon, have purchased of E. P. Allis & Co., Milwaukee, four pair of Gray's Noiseless Roller Mills.

E. P. ALLIS & CO., Milwaukee, have sold T. M. Shirk & Co., of Mt. Carroll, Ill., 4 pair of Gray's Pat. Noiseless Roller Mills.

E. P. ALLIS & CO., of Milwaukee, are building a 50x80 Reynolds-Corliss cylinder for compounding Edw. Sanderson's engine.

CAPITOL CITY MILLS, of Salem, Oregon, ordered of E. P. Allis & Co., of Milwaukee, 6 pair of Gray's Pat. Noiseless Roller Mills.

THE 4 pairs of Gray's Noiseless Roller Mills bought by Schinger & Schauble, Mascoutah, Ill., were from E. P. Allis & Co., Milwaukee.

J. J. KNOEPLER & CO., of Milwaukee, ordered E. P. Allis & Co., to improve their present engine by putting on a 20x38 Reynolds-Corliss Cylinder.

JOHNSON & CUNNINGHAM, of Centralia, Ill., have just purchased of E. P. Allis & Co., of Milwaukee, 6 pairs of Gray's Pat. Noiseless Roller Mills.

JAMES K. HURIN, of Cincinnati, has lately ordered of E. P. Allis & Co., Milwaukee, 4 pairs of Wegmann Patent Porcelain Rolls for middlings.

E. P. ALLIS & CO., of Milwaukee, have an order from Hafley, Fuller & Co., of LaFayette, Ind., for 6 pair of Gray's Pat. Noiseless Roller Mills.

GIBSON & CO., Indianapolis, in repairing their mill ordered 6 pair of Gray's Patent Noiseless Roller Mills of E. P. Allis & Co., Milwaukee.

E. P. ALLIS & CO., Milwaukee, have lately received an order from Chisholm Bros., of Chicago, for 14 pair of Gray's Pat. Noiseless Roller Mills.

E. P. ALLIS & CO., have just received an order from the Salem Mill Co., of Salem, Oregon, for 4 pairs of Wegmann Pat. Porcelain Rolls for middlings.

CHISHOLM BROS., Chicago, Ill., have ordered two pairs of Gray's Patent Noiseless Roller Mills, from E. P. Allis & Co., of Milwaukee, to be sent to London.

D. L. WING & CO., of St. Louis, say they have ordered 18 pair of Gray's Pat. Noiseless Roller Mills of the extensive mill furnishers E. P. Allis & Co., Milwaukee.

EDW. SANDERSON & CO., of Milwaukee, will put in 12 more pair of the Gray Pat. Noiseless Roller Mills. E. P. Allis & Co., of Milwaukee will furnish the machines.

WM. ANNESER, of Ottawa, Ohio, have ordered of E. P. Allis & Co., of Milwaukee, 6 pair of sharp cutting iron rolls and two pair of Wegmann Patent Porcelain Rolls.

THE 10 pair of Gray's Patent Noiseless Roller Mills to be used in the mill of Geo. Fortune, of River Falls, Wis., are to be furnished by E. P. Allis & Co., Milwaukee.

E. P. ALLIS & CO., of Milwaukee, have sold T. W. Kelly, of Elgin, Ill., 8 pair of sharp corrugated iron rolls for wheat and 1 pair of Wegmann Pat. Porcelain Rolls for middlings.

THE power used to run the new roller mills being built for Walsh, DeRoo & Co., Holland, Mich., by E. P. Allis & Co., of Milwaukee, will be a 14x42 Corliss engine from the same firm.

E. P. ALLIS & CO. have the order of J. S. Wheeler, Murfreesboro, Tenn., for 5 pairs of sharp corrugated iron rolls for wheat and one pair of Wegmann Patent Porcelain Rolls for middlings.

HARRINGTON & MOREHOUSE, of Jefferson, Iowa, have decided to adopt the roller system and placed an order with E. P. Allis & Co., of Milwaukee, for 14 pair of Gray's Patent Noiseless Roller Mills.

E. P. ALLIS & CO., of Milwaukee are changing over the mill of Johnson & Co., Franklin, Pa. 9 pair of sharp cutting rolls for wheat and 8 pairs of Wegmann Pat. Porcelain Rolls for middlings will be used.

J. MILLER & CO., of Racine, with their accustomed enterprise have ordered E. P. Allis & Co., of Milwaukee, to replace their 8x24 Reynolds-Corliss Engine destroyed with their shops, at Racine by the recent fire.

UPHAM SON & CO., of Blue Rapids, Kan., are changing over their mills to the roller system. They have bought 16 pair of Gray's Patent Noiseless Roller Mills and all necessary machinery of E. P. Allis & Co., Milwaukee.

HICKS, BROWN & CO., of Mansfield, O., are making extensive repairs in their mill, increasing the capacity to 400 barrels, and using 25 pair of sharp cutting iron rolls for wheat

A NEW DEPARTURE

We are the Sole and Exclusive Licensees for this Country under the
MORRITZ MARTIN PATENTS

SONS

CENTRIFUGAL FLOUR DRESSING REELS

And we are now prepared to fill orders for machines with latest improvements, which include

**OUR NEW DOUBLE CONVEYORS,
NEW CLOTH FIXING AND STRETCHING DEVICE,
NEW AND SIMPLIFIED MANNER OF DRIVING.**

THE CENTRIFUGAL has more than FOUR TIMES the capacity of the ordinary reel, and will make clear flour and a clean finish on stock that cannot be treated in the common reel without loss, no matter how much silk it is passed over.
IT IS SPECIALLY ADAPTED to handling soft, reground material, full of light impurities, whether from rolls or stone.
IT IS INDISPENSABLE to a CLOSE FINISH in any system of gradual reduction milling, and will improve the quality of the low grade flour at the same time it makes the offal cleaner.
IT MAKES A CLEAN SEPARATION on caked and flaky meal from smooth rolls, which no other style of reel can do.
IT IS VASTLY SUPERIOR to the common reel for dusting middlings.
THEY CAN BE USED TO ADVANTAGE as a complete system of bolting, to the exclusion of the ordinary reel.

Over One Hundred sold in six weeks.

REFERENCE TO LEADING MILLERS IN THE UNITED STATES.

Write for descriptive circular and price list to

GEO. T. SMITH MIDDLINGS PURIFIER CO., - Jackson, Michigan.

(Mention the United States Miller when you write.)

and 15 pair of Wegmann Pat. Porcelain Rolls for middlings. The rolls will run in Gray's pat. noiseless frame with belt movement. E. P. Allis & Co., of Milwaukee, are doing the work.

A STEAM boiler must burst before an explosion takes place, but the interval between the bursting and the explosion is of a short duration as that between the breaking of a gun cap and the discharge of the gun.

DILLON, BOWERS & STOCK, of Rock Falls, Ills., have placed an order with E. P. Allis & Co., Milwaukee, for 7 pair of sharp corrugated iron rolls for wheat and two pair of Wegmann Pat. Porcelain Rolls for middlings.

S. T. HAYT, of Corning, N. Y., ordered of E. P. Allis & Co., Milwaukee, 11 pair of sharp cutting iron rolls for wheat and 1 pair of Wegmann Pat. Porcelain Rolls for middlings.

THOS. J. COX, Bloomington, Ill., is changing his mill, and has ordered of E. P. Allis & Co. 12 pairs of Gray's Pat. Noiseless Roller Mills, 11 pairs of sharp corrugated iron rolls for wheat, and one pair of Wegmann Pat. Porcelain Rolls for middlings.

THE new roller mill being built by E. P. Allis & Co. for Walsh, DeRoo & Co., Holland,

Mich., will use 18 pair of sharp cutting iron rolls for wheat and three pair of Wegmann Patent Porcelain Rolls for middlings, all in Gray's Pat. Noiseless Frame with belt movement, and all the machinery necessary for a 600 barrel mill.

SMUT in wheat is a plant, and like the mushroom is propagated by its own seeds, which are so small, that they are absorbed by the wheat plant with the water taken from the soil and conveyed with the sap to the wheat kernel, where it finds proper elements for its development, turning the whole interior of the kernel to one mass of smut.

J. H. REDFIELD, of Salem, Ind., writes that the prospects for the mill furnisher and millers are very good, so far as his observation goes. He says "I have now under contract and am building new mills as follows: one 8 run mill for H. Matthews, at Tunnelton, Ind., one three run mill for Jonathan Turley, Mitchell, Ind., one 4 run mill for H. L. Giers, at Otterville, Ill., I am overhauling and furnishing new machinery for O. H. Merritt, Jonesville, Ind.; F. M. Lemmons, Leesville, Ind.; Gwartney & Watson, Mauckport, Ind., and others.

My sales for purifiers during the past few weeks are as follows: Louis Jeffries, Rochester, Ill.; Phillip Crackman, Saulsbury, Ind.; Thos. Bradford & Co., Cincinnati, O.; S. M. Smith, York, Pa.; Johnson & Mellot, Scottsburg, Ind.; H. W. Clark, Knoxville, Tenn.; Wanner & Hoag, Marlette, Mich.; Isaac Shepherdson, Riverton, Neb.; W. R. Russell, Concord, Tenn.; N. C. Durham,

Melan, Ind.; Michael Robert, East Berlin, Pa.; F. M. Lemonds, Leesville, Ind.; Bailey Bros., St. Paul, Ind.; J. D. Hammond, Hammonds Mills, Ga.; Col. Schultz, Blanchard, Iowa; H. W. Blark, Knoxville, Tenn.; Gregsby & Gregsby, West Baden, Ind.; Josiah Peeling, York, Pa.; James Davenport, Abbeville, O.; Jonathan Turley, Nutchell, Ind.; and others.

THE following millers have lately placed orders with E. P. Allis & Co., of Milwaukee, for Gray's Patent Noiseless Roller Mills: Wilderman & Hill, Freeburg, Ill.; H. Temple, Fenton, Mo.; Engelke & Feiner, St. Louis, Mo.; D. B. Merrill & Co., Plainsville, Mich.; Ellis Faber, Rich Hill, Mo.; Teusner & Co., St. Louis, Mo.; Whitmyre, Brungard & Co., Pittsburgh, Pa.; Geo. Hasler, Salt Lake City, Utah; Wood Maude Milling Co., St. Louis, Mo.; Little Piney Mills, Rolla, Mo.; Alonzo George, North Aurora, Ill.; N. Long & Co., Russellville, Ky.; J. B. King & Co., New Brighton, Staten Island; McQueen & Sanbrook, La Barge, Mich.; A. Henshaw & Co., Marcus Iowa; Swarting & Co., Wolcott, Iowa; Joe Kratochwill, Dayton, O.; Mt. Leonard Mill Co., Mt. Leonard, Mo.; Geo. A. Mix, Oregon Ill.; Wm. Steigley, Kingsbury, Ind.; Hobson & Hartsock, Nokomis, Ill.; John Hurd, Marshall, Mich.; Wm. Wells, Hillsboro, Ill.; D. B. Pocock, Navarre, O.; L. W. Taylor & Co., Mt. Pleasant, Iowa.; Chambers & Smiler, Hegensville, Mo.; Ardinger, Piper & Co., Carrollton, Ill.; Park Bros., Ada, O.; Holliday & Duncan, Cobden, Ill.; Page, Norton & Co., North Topeka, Kan.; Oatley & Hargrave, Bonville, Ind.; Hood & Bradley, Belmont, N. Y.; Wacker & Ash, Niantic, Ill.; J. K. Mulley & Co., Denver, Col.; Kidder Bros., Terre Haute, Ind.; H. B. Powell, Shawneetown, Ill.; F. W. Stock, Hilledale, Mich.; Week, Funger & Co., Marietta, Ill.; W. G. Gage & Co., Fulton, N. Y.; Capre County Mills, Jackson, Mo.; Wm. Abbot, Hillsburg, Ill.; Dillon, Brown & Stock, Rock Falls, Ill.; McMahon & Co., Greggsville, Ill.; F. L. Johnson & Co., St. Louis, Mo.; Dartch & Munford, Clarksville, Tenn.; Williams, Tall & Co., Whalan, Minn.

NEW ZEALAND.

CHRISTCHURCH, 1st March, 1882.—In our last monthly circular we made reference to the vast amount of damage done to the standing crops of ripe corn by the blighting northwest winds which prevailed during the last week in January, and we regret to say that the extent of that damage is being more fully realized now that harvest operations are further advanced. Fortunately the acreage under wheat in this district is greater than in the previous year, and will, in some measure, compensate for the reduced yield, but even with the increased acreage the total supplies available for export will fall considerably below the figures of last season. The quality of the wheat this year is dry and sound, but owing to the continuance of dry weather the berry is not so plump as last year. Tonnage—the tonnage engagements for the United Kingdom are slightly over 80,000 tons capacity, and it is questionable if sufficient wheat will be forthcoming to complete the vessels

which are already fixed. We cleared the Firth of Lorne yesterday, with the first cargo of this season's wheat; extensive shipments will be made during the current month. Wheat—to-day's prices are equal to 4s. per 480 lbs. c. f. and i. to Europe, or 4s 7d. to 4s 8d. per bushel, f.o.b., for standard samples of average quality, whilst Tuscan is selling at 4s. 9d. to 4s. 10d. f.o.b., with a fair demand. Flour is dull, and to-day's quotation is £10 per ton f.o.b., with a weak market.—The New Zealand Grain Agency and Mercantile Company, Limited.

RECENT MILLING PATENTS.

APRIL 25, 1882.

Middlings purifier, Anton Besser, Vienna, Austria.

Feeder for roller mills, Chas. B. Campbell, assignor to John T. Noye Mfg. Co., Buffalo, N. Y.

Buckwheat huller, G. S. Cranson, assignor to R. L. Downton, St. Louis, Mo.

Mill-pick, Lawrence Lafayette Suncock, N. H.

Wheat-heater, Nordyke & Marmon Co., Indianapolis, Ind.

Grain-dryer and heater, L. C. Porter, Winona, Minn.

Grinding-mill, C. H. Morse, Chicago Ill.

Grain-dryer and cooler, Stanley E. Warrell, Hannibal, Mo.

MAY 2, 1882.

Grain-Cleaner, Isaac Snare, Richwood, Ohio.

Rice-polisher, Henry B. Stevens, Buffalo, N. Y.

Automatic grain-weighing machine, Simpson & Gault, Cincinnati, O.

MAY 9, 1882.

Grinding-roll, Richard Birkholz, Milwaukee, Wis.

Grinding-mill, James M. Collier, Gadsden, Ala.

Millstone-dress, John M. Speer, Jr., Fort Branch, Ind.

MAY 16, 1882.

Centrifugal separator, Albert D. Bellinger, Minneapolis Minn.

Roller-mill, John R. Davis, Jr., Neenah, Wis.

Grain-conveyer, Robert Dunbar, Buffalo, N. Y.

Grain-elevator, Frank J. Firth, Philadelphia, Pa.

Hominy-mill apparatus, James Goodyear, Yonkers, N. Y.

Dust-collector, Francis H. McElfrish, Terre Haute, Ind.

Middlings-purifier, Geo. T. Smith, Jackson, Mich.

Millstone-driver, Lewis P. Weaver, New Harmony, Ind.

MAY 23, 1882.

Grain-decortinating apparatus, Wilson Ager, Washington, D. C.

REPORTS from Texas say that the crop outlook there was never better. So far every thing looks encouraging for a bountiful harvest in the southwest.

[Written for the UNITED STATES MILLER]
The Miller's Cough.

By FRANK B. GOLLEY, M. D., of Milwaukee, Wis.

Among the many diseases to which the human family is liable, probably but one or perhaps two, should excite more alarm, or appeal more definitely to the patient and friends for prompt relief, than the series of lung afflictions. Their insidiousness seems calculated to mislead, and in the vast majority of cases it does so. As introductory to the special diseases to be considered, and in order that a clearer and more comprehensive idea of the special conditions in question may be obtained, let us first inquire into the ordinary causes of cough. 1st; we may have a cough from an irritable condition of the lining membrane, of the throat and larynx. That is the membranes are very sensitive and easily irritated, causing cough. 2nd; cough may be caused by some source of direct irritations in the throat or bronchial tubes, such as inhaling very cold air, irritating gasses, or particles. 3rd; a person may cough from an unhealthy condition of the blood, influencing the nervous system, as in rheumatic and gouty individuals, also in malarial poisoning. We may have cough from direct nervous disturbance in cases of diseased brain, and from hysteria, but these need not detain us here. 4th: a vast number of cases of cough are from reflex irritation. The irritation may be in the lungs, from the heart, liver, or from the alimentary canal. (dyspepsia.) The character of cough is unhappily too familiar to people in general, and certainly needs no time at my hands. All artisans working in dust for a sufficient length of time, are sooner or later affected with throat, bronchial, and lung troubles, often of a severe nature; especially do we find this the case with men working in metal, stone, cotton, coal mines or flour mills; cough, usually being a prominent symptom. The minute particles of the substances enter the lungs with the inspired air, producing for a time perhaps no noticeable effect; but after a sufficient quantity has come in contact with the now irritated surfaces, the effect is disastrous in the extreme. Nature has provided admirably, but not in all cases adequately for these conditions. So long as the particles are in the bronchial tubes, the peculiar structure of the membrane is such, that they are continually carried toward the throat, and may, in moderate quantities be thrown off. After they have passed the tubes, and come in contact with the delicate lung membranes they can in no way be thrown off except by the quick expulsion of the contained air or breath. After what has been said it will be apparent to the most casual observer that too particular precautions cannot be taken in these cases. In all authorities on throat and lung diseases we find as one of the prominent causes of bronchitis and consumption the following words: "the inhalation of irritating particles." The reader will now easily understand how, in the stone-cutter or metal-worker the continual application of minute, but irregular sharp pointed pieces of metal or any other material, to so delicate a structure, can do untold injury. After these conditions have existed for a length of time, a slight irritation ensues, with congestion and increased secretion. Soon an inflammation ensues which, with the often poorly ventilated working apartments paves the way for that disease which prevails in every quarter of the globe, viz; consumption. Over three millions of people die annually with this disease. It also occasions a larger proportion of deaths than any other disease not epidemic or endemic. What has been said in regard to men working in metals or stone is applicable to those employed in coal mines. Here we not only have the irritating qualities and poor air, but the lungs may become so saturated with the coal dust, that they are discolored and as is the case with those already mentioned, the breathing capacity is severely compromised. We now come after a brief comparison of the same conditions in allied occupations to the particularly interesting part of our subject. In Millers we have a more favorable, but sufficiently annoying condition. Here we have to deal with an organic substance, easily decomposed, but of itself containing some decidedly irritating ingredients. Wheat when analyzed is found to consist principally of starch crystals (60 per cent.) which are insoluble in water, and about equal parts of gluten, (the sticky tough part of flour when wet,) and dextrin (10 per cent.) together with some mineral, oily and waxy substances. It might be well to add that wheat contains 12 per cent. water. Now in order that the effect of the dust on the lungs may be more readily under-

stood, with the reader's permission, I will briefly show the conduct of flour under similar circumstances outside the body. Afterward how exactly we may have these same processes going on in the lungs. When flour is moistened with a little water, it, as is well known putrefies very easily; this is caused by the gluten which is composed of several substances, viz: sulphur, carbon, nitrogen, hydrogen, &c. By the means of the putrefying gluten, fermentation in the sugar and starch is produced with the formation of acetic and lactic acids. Both are quite powerful acids. Again if a slightly alkaline solution be added to flour, the gluten is dissolved and the starch crystals are thrown down. Luckily these crystals are of a more rounded form, and not so irregular as those of stone or coal. Right here allow me one digression, and that is, that raw starch is very difficult of digestion, passing the body undigested. The chewing or eating of wheat is a prolific cause of dyspepsia, and as has been before mentioned, dyspepsia may cause cough. From what has thus far been shown, we may with confidence deduce the following conditions regarding millers' cough. 1st; we have fourteen hundred square feet of membranous surface in the average lung, with which particles of dust are continually coming in contact, and as I have already shown may become decomposed; for here we have the proper conditions. A warm moist membrane secreting an alkaline fluid, readily mixing with the dust, and its subsequent decomposition is separated from the blood by a membrane only one twenty-four-hundredth of an inch in thickness. That is a narrow space, but in a healthy man who has lived his three score years and ten not one drop of blood ever escapes. It is a wonder that so little trouble is experienced from these conditions.

This state of affairs continuing for years with but little if any intermission, produces the inflamed conditions recognized by many long engaged in flouring mills. This eventuates in a chronic catarrhal condition of the whole membranous surfaces, often being an extension downwards from the bronchial tubes. This irritable condition of the membrane lining the tubes after a time renders the nerves in these parts hyper-sensitive, producing spasms of the muscular fibers of the tubes inducing that excessively annoying affection, "asthma". It is quite uncommon to find a case of pure spasm of the tubes unassociated with its twin affection bronchitis. In treating a case of asthma the remedies are often directed to the bronchitis, as the primary lesson. After these milder conditions have existed for a length of time, with but little if any improvement, it merges into chronic catarrhal pneumonia, with excessive cell proliferation, which may be so abundant as to stop up the alveoli of the lungs, or in the next place, it may in connection with the last, progress into chronic interstitial pneumonia (that is a chronic inflammation of the tissue between the lung spaces) which is neither more nor less than a variety of consumption. Its onset is slow and at first its symptoms are undefined; but in an individual exposed to the inhalation of metal, stone, cotton, or grain-dust, who has dragging pains in the sides, short breath, irritable and ineffectual cough, gradual loss of strength, and perchance a night-sweat, be cautious of him, and use every effort for his relief, for fear of the result.

The more prominent conditions of millers' cough have been touched upon, and considered; we have also acquainted ourselves with a number of its characteristics; this being done, we are now in a position to intelligently suggest some means for its relief. Ordinarily, if we wish to rid ourselves of any disagreeable condition, we look after the cause, and if possible, remove it. The prime cause in this case is irritation, caused by inhalation of dust. Good advice would be to avoid the dust and breathe pure air for a time, but as this is out of the question, we must accommodate ourselves to the situation.

It has seemed to be impracticable to wear some form of shield to keep the dust from the lungs, or it would have been more generally adopted by millers. I would suggest, however, (I believe some are in use now) that if a practical instrument of this kind could be satisfactorily adopted, it would be of great service in many cases.

We have now disposed of the mechanical appliances at our command, and as a last expedient will turn our attention to the selection of those agents likely to be the most serviceable after the disease is fully established. Should there be a decidedly catarrhal condition confined particularly to the throat, the following preparation would be useful. It will be noticed, by the way, that we may

have the causes of cough as enumerated at the beginning of this article, but each is subject to dust as the existing cause.

Recipe.

Pulv. Ammon Chloride, forty grains,
Syr. Senigae, half an ounce,
Ext. Hyoscyami, Fluid, half an ounce,
Syr. Tolu, add enough to make four ounces.

Sig: Take a tea-spoonful from four to six times a day.

Should the trouble be further down in the chest, with asthma and considerable expectoration, use the following:

Recipe.

Tinct. Bellidonna, three drams,
Syr. Ipicac, four drams,
Tinct. opii Camphorata, one ounce,
Pulv. Ammon Chloride, thirty grains,
Syr. Tolu, sufficient to make four ounces.

Sig: Use a tea-spoonful three to five times a day as required; use after meals and on retiring.

If the cough occurs in a nervous person with but little expectoration, and no consumption, try the following:

Recipe.

Acid Hydrocyanic, dilute, half a dram,
Spts. Chloroform, two drams,
Syr. Scillae, three drams,
Aqua. Lauri Cerasi, three drams,
Syr. Simple, sufficient to make three ounces.

Sig: Take a tea-spoonful after meals and on retiring.

The various forms of dyspepsia causing cough are so numerous, and depend upon so many conditions, that it is impossible to give any one or two prescriptions applicable to all the cases, nevertheless I will give as a tonic, where the lungs have a tendency to inflammation, the following:

Recipe.

Acid nitric dilute, two drams,
Tinct. Columbae, one ounce,
Syr. Ginger, one ounce,

Add Tinct. Aurantii, sufficient to make four ounces.

Sig: Take a tea-spoonful three times a day as a tonic at meal time.

As a stomach bitter and tonic where no acid is needed, try the following:

Recipe.

Tinct. Cinchona comp., one ounce,
Tinct. Gentian comp., one ounce,
Syr. Limonis (U. S.), two ounces.

Sig: Take a tea-spoonful three times a day in a little water before meals (take clear if preferred).

Hoping some of the above suggestions may be of service to the numerous readers of THE UNITED STATES MILLER, I am,

Yours respectfully,

F. B. GOLLEY, M. D.

NEWS.

Everybody Reads This.

ITEMS GATHERED FROM CORRESPONDENT, TELEGRAMS AND EXCHANGES.

BURNED—J. B. Syke's mill at Harber, Mo.

GEO. Dow is renovating his mill thoroughly, at Cambridge, Wis.

WILLIAMS & KLENCK are building a mill at Oakland City, Ind.

SAXTON & MILLIGAN, at Summer, Ill., are remodeling their mill.

A TWO-RUN water mill is being built at Salem, Ga., for J. D. Langhorn.

M. GROFF has purchased Miller Bros. & Co.'s mill at West Caro, Ohio.

J. M. Woods of Knightstown, Ind., has sold his flour mill to J. Holland.

NELSON MUNSON will build a 100 barrel roller mill at Warren, Minn., this year.

THE Minneapolis millwright firm of Gunn Cross & Co. has dissolved partnership.

THE great flour mills at Cardiff, Wales, were destroyed by fire May 5th. Loss \$250,000.

Heuck's flour mills were burned recently at Chaska, Minn. Loss \$20,000. Insurance \$5,000.

F. W. ALDRIDGE is said to have purchased Roberts & Perkins' mill at Fargo, Dak. He will make extensive improvements and increase capacity.

THE Throop Grain Cleaner Co. now of Auburn, N. Y., will, it is said, soon remove to Buffalo, New York.

CROCKER, FISK & Co.'s new mill at Minneapolis, Minn., will have a capacity of about 500 barrels per day.

THE Eureka Mfg. Co. of Rock Falls, Ill., have sold a Becker Brush to the Noel Mill Co. of Nashville, Tenn.

THE business men of Stromsburg, Neb., have raised a bonus of \$2,000 towards the erection of a grist mill at that place.

A NEW process four-run flouring mill using rolls for finishing, is being built at Union Mills, Md., for E. F. Shriver & Co.

L. C. PORTER, of the Porter Milling Co. of Winona, Minn., will, with his family, go to Europe to spend the summer.

COL. A. W. WOODFORD, of Weston, W. Va., is about to commence the erection of a fine large flouring mill driven by an automatic engine.

THE flouring mill at Vail, Ia., was struck by lightning and set on fire, but the flames were extinguished before much damage was done.

WASHBURN, CROSBY & CO., of Minneapolis, will put in one of Stout, Mills & Temples' water wheels with a capacity of 800 horse power.

THE Southern States have during the past season purchased \$177,000,000 worth of bread-stuffs and provisions from the Northern States.

MESSRS. W. & F. LIVINGSTON, importers of bolting cloths and millstones, have removed from Broadway to Greenwich street, New York.

MAY 16, the engine house and grist mill on Gov. Smith's farm at St. Albans Bay, Vt., was burned, the loss being \$2,500, partially insured.

A WORKMAN in Owen Clarke's new mill at Stevens point, Wis., fell a distance of eighteen feet one day last week, receiving fatal injuries.

A LARGE grain elevator and flouring mill is being built at Athens, Ga., for the Athens Com press and Mill Co., to be driven by a Cummer engine.

TODD MILLS at Dallas, Texas, are putting in a new brush machine, and have bought the "Becker" of the Eureka Mfg. Co. of Rock Falls, Illinois.

E. A. THOMAS has commenced the erection of a first-class new process flouring mill, to be driven by an automatic engine, at Strausburg, Nebraska.

WM. SCHAFER of Lancaster, Mo., wants the best brush made, and after looking around has bought the "Becker" made by the Eureka Mfg. Co. of Rock Falls Ill.

A 200-barrel gradual reduction mill using Jonathan Mills reduction mills for reducing purposes, rolls for finishing is being built at Charleston, Ill., for F. F. Randolph.

HERZOG & ROBERTS' flour mill in Racine, Wis., was burned down recently. Loss \$20,000. Insurance \$16,000. The mill will be rebuilt immediately on the latest and most improved plan.

HOFER BROS. of Moundsville and Powhattan, O., have ordered machinery for a large combined stone and roller mill of Nordyke & Marmon Co., which will be erected at Powhattan.

W. A. SETTLE of Clarkswell, Tenn., wants a Becker Brush, and no other one. He knows that the work it does can't be beat and orders one from the Eureka Mfg. Co. of Rock Falls, Ill.

FRAZIER MACKAY, formerly of Algona, Iowa, has accepted the offer of the citizens of Pipestone, Minn., who agreed to pay a bonus to him in case a four-run new process mill was built there.

JOHN McFARLAND of Watertown, Pa., has heard what the Becker is doing for other mills, and don't intend to be behind. He has sent an order for one to the Eureka Mfg. Co. of Rock Falls, Ills.

J. H. TOWNSHEND & CO. have purchased Isaac Staples' mill at Stillwater, Minn. Townshend & Co.'s two mills in Stillwater have a capacity of 550 barrels per day. Their old mill will soon have its capacity enlarged.

DAVIS & TAYLOR of Lawrence, Mass., (the largest millers in the state) upon investigation have concluded the Becker was what they wanted, and have ordered one of the Eureka Mfg. Co. of Rock Falls, Ill.

JOHN LEAN & CO., Whitewater, Wis., telegraphed for a Becker Brush to come quick. It will improve the grade of his flour. The Eureka Mfg. Co. of Rock Falls, Ill., sent him one by telegraph time the same day.

COOLEY, WHEELOCK & REED, of Murfreesboro, Tenn., are overhauling their mill, and find they want a Becker Brush to properly clean their wheat and have ordered one through their contractors from the Eureka Mfg. Co. of Rock Falls, Ills.

G. A. WEBBER, a first-class millwright and mill furnisher of Nashville, Tenn., is overhauling a number of mills in the Southern States, and has put in Becker Brushes in them, and says his customers can't find anything to suit them so well as the Becker.

O. S. ANNIS of Atlanta, Ga., who took an active part at the Atlanta Exposition in the mill furnishing line, writes us that he is crowded with applications to overhaul old style Southern mills, and so far they all want the Becker Brush to thoroughly clean the wheat.

THE mill property at Menomonie Falls, Wis., belonging to J. B. Nehs, has lately been sold to Fred. Lepper, of Milwaukee, and Peter Schlafer, of Germantown, Wis., who will hereafter conduct the business. Mr. Lepper is said to be an old first-class mill hand, and it is expected that under his supervision the mill will be greatly improved.

ALFRED H. CARY, a former mill owner, died May 16, at Grand Rapids, Mich., aged 71. In 1854 he bought the Buena Vista mills, at Bear Creek, in Plainfield, Mich., which he operated, in company with R. M. Collins, for about fifteen years. In 1869 he purchased an interest in the Valley City Mills, which were operated by A. H. Cary & Co. till about five years ago. He was highly esteemed among his acquaintances, and did much towards building up the city which was his home.

E. P. Bacon & Co.,

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Special Attention given to the Purchase and Shipment of Grain for Milling Purposes.

We have an experienced man in attendance at each elevator constantly, to see to the inspection of grain when loaded into cars for shipment, and the interests of parties ordering through us will be carefully protected in every way.

Orders for Purchase and Sale of Grain for Future Delivery will be Promptly and Carefully Executed.

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SOLE BOTTLERS OF

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CELEBRATED MILWAUKEE LAGER BEER,

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MILWAUKEE,

WISCONSIN.

BOTTLERS' SUPPLIES CONSTANTLY ON HAND.

Parties corresponding will please state where they saw this advertisement.]



IRVIN & CALLAN of Washington, Ga., are completely overhauling their mill, and added a Becker Brush to their cleaning machinery. C. S. Annis, the well-known millwright of Atlanta, Ga., is contractor and superintendent of the work. It is to be a first-class mill in every respect.

The current in the river changed the channel in the White River, Ind., recently and left the water-power flour mill at Whitehall high and dry a long distance from the new channel. The proprietor of the mill thinks it will be easier to put in a steam engine than to move the river back again.

REBUILT.—The Southern Mills, which are owned by Engelke & Feiner, and which were partially destroyed by fire last Christmas, have been rebuilt and, with increased capacity, are now ready for and doing a big business. The mills are situated on Fifth Street, near Gratiot, St. Louis. The owners are to be congratulated upon so speedy a resumption of active operations.

THE following well-known mill furnishing houses have ordered Becker Brushes for their contracts for the past month and the past few years, and tell us their customers are suited every time: Sinker, Davis & Co., Indianapolis, Ind.; Barney & Kilby, Sandusky, Ohio; Richmond City Mill Works, Richmond, Ind.; Nordyke & Marmon Co., Indianapolis, Ind.; Oscar Oexle, & Co., Germany.

In Mayer's mill, Bloomington, Ill., Peter Ronic, aged about 18, met with a terrible accident a few days ago. His clothing caught in the cogs, and he was drawn into the machinery. He was terribly mangled, his left leg being broken and left arm badly shattered. The flesh on both broken limbs was fearfully mangled. The arm must be amputated, but it is said the leg can be saved.

AMONG the new enterprises which Independence, Kas., has secured this spring, the large flouring mill of Mr. Bowen of Ottumwa, Iowa, is one of the most important. He is an old miller and wheat buyer, and has the necessary capital to manage the business to its full extent. The excavations for the basement has commenced, and work on the three upper stories will be hurried forward, in order to be able to handle the new wheat crop.

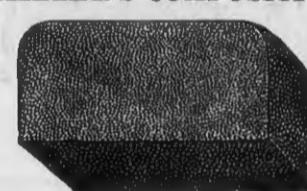
The Kehlor Milling Co., of St. Louis, have closed a contract with the John T. Noye Mfg. Co., for furnishing the machinery for their new mill in that city. The building is 36x180 feet, and five stories high, and will have capacity for turning out 800 barrels of flour in 24 hours. This mill is to be fitted up on the Stevens roller system complete, containing twenty-two double Stevens roller mills. The machinery will be driven by a 28x48 Corliss engine. Cleaning machinery, purifiers, bolting, etc., will be the same as that usually used in such mills. The rolls will be driven by belts entirely, and exhaust from same taken by two Sturtevant fans. All iron work, bolting chests, aspirators, etc., are to be made by the contractors in Buffalo, and the Richmond Mfg. Co., by special contract with Mr. Kehlor, will furnish the cleaning machinery.

THE Victor flouring mill at Ottawa, Ill., Cotton, Dowell & Hamilton, proprietors, completed about two months since, is a fine new building of wood, four stories, costing upwards of \$40,000. It is situated on the banks of the Fox and Illinois rivers at their junction, from which it draws its power. There is 23 feet head and fall, with water constant and abundant. They drive ten sets of Hungarian rollers, and one run of buhrs. The capacity of the mill is 250 barrels per day. It is running on winter wheat exclusively, and the larger part of its product is taken by the home market.

John H. Miller,

MANUFACTURER OF

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FACE RUBBER, 12x6x3 inches; weight 12 lbs.; price, \$3.00. FURROW RUBBER, 12x6x1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 1 $\frac{3}{4}$ and 2 inches, as required, \$2.50; or both for \$5.00, by Express. Furrow Gauges and Staff \$1.25 per set, by mail. Send for circulars, testimonials &c. Address all orders as above.

N. B.—This Rubber will not wear a pair of Buhrs out of existence in 15 minutes. But if used in connection with the Pick and Red Staff will leave the face and Furrows in the best possible condition for making good work. For cleansing the face of Glazing it has no equal. Try it and be convinced. Money refunded if not satisfactory.

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Address, JOHN HAWKS,

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Steam Flouring Mill For Sale.

On account of owner's death. Four acres of land with the mill with 4000 grape vines and orchard. Mill has three run of buhrs. It is three stories high and has good stone basement; built six years ago. Mill now has a good custom trade and is also adapted to merchant milling. Plenty of grain raised in the vicinity with large demand for feed stumps. A modern built frame house and barn in good order on the premises. Situated 8 $\frac{1}{2}$ miles from Allegheny, only $\frac{1}{4}$ mile from city line. Terms: Half cash, balance on time to suit purchaser. Address

MRS. JNO. KNOEDLER,
West View, Allegheny Co., Pa.

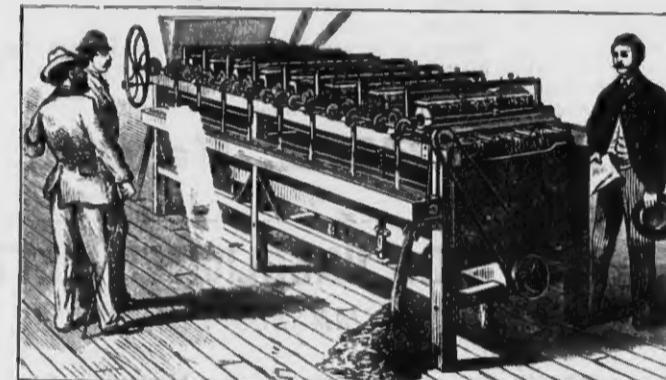
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The first Machine manufactured was put up soon after the United States patent was granted, in February, 1880, in the ATLANTIC MILLS, BROOKLYN, and has been in almost constant practical use since, demonstrating beyond a question that it possesses the following advantages:

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- It Dispenses with the Dangers of Explosion and Fire.
- IT PURIFIES DUST HOUSE MATERIAL OF ALL KINDS.
- IT PURIFIES THE FINEST MIDDLING OF ALL KINDS.
- It is Remarkably Adapted to Custom Mills.
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SOMETHING NEW.

A Combination Electric Purifier—A Complete System of Three Purifiers in One.

Samples of work will be sent upon application, by mail, and all inquiries answered from the New York Office. Parties contemplating building new mills, or reconstructing old ones, should see the superior working of the ELECTRIC SYSTEM before making contracts for Purifiers elsewhere.

JOHN RICE,

General Manager.

GEO. G. SMITH, San Francisco, Cal.,

Manufacturer and Agent for the Pacific Slope.

JAMES E. LOOMIS, St. Louis, Mo.,

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Call your attention to the following REASONS WHY, if about to make a Journey to the GREAT WEST, you should travel over it:

As nearly absolute safety as is possible to be attained. Sure connections in UNION DEPOTS, at all important points. No change of cars between CHICAGO, KANSAS CITY, LEAVENWORTH, ATCHISON or COUNCIL BLUFFS. Quick journeys because carried on Fast Express Trains. Day cars that are not only artistically decorated, but furnished with seats that admit of ease and comfort. Sleeping cars that permit quiet rest in home-like beds. Dining cars that are used only for eating purposes, and in which the best of meals are served for the reasonable sum of seventy-five cents each. A journey that furnishes the finest views of the fertile farms and pretty cities of Illinois, Iowa and Missouri, and is afterwards remembered as one of the pleasant incidents of life. You arrive at destination rested, not weary; clean, not dirty; calm, not angry. In brief, you get the maximum of comfort at a minimum of cost.



That the unremitting care of the Chicago, Rock Island & Pacific Railway for the comfort of its patrons is appreciated, is attested by its constantly increasing business, and the fact that it is the favorite route with dealers and visitors to the great assemblages, political, religious, educational and benevolent, that assemble from time to time in the great cities of the United States, as well as tourists who seek the pleasantest lines of travel while en route to behold the wonderful scenes of Colorado, the Yellowstone and Yosemite. To accommodate those who desire to visit Colorado for health, pleasure or business, in the most auspicious time of the year, the Summer season and months of September and October, the Company every year puts on sale, May 1st, at all coupon ticket offices in the United States and Canada, round trip tickets to

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At reduced rates, good returning, until October 31st. Also to San Francisco, for parties of ten or more, good for ninety days, at great reduction from regular fares.

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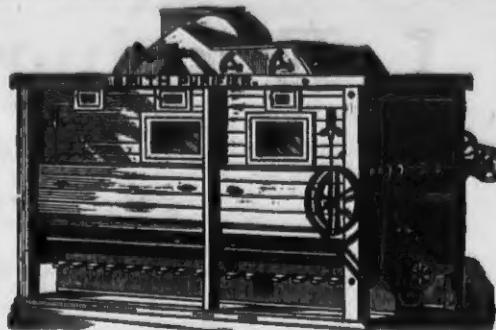
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Is in Use in Every Milling Country in the World.

Has GRADED, CONTROLLABLE AIR CURRENTS.

Has a POSITIVE AND EFFICIENT means of cleaning the Silk of the Sieve.

It is Impossible to do Good and Economical Work without these Features.**OUR CLOTH TIGHTENER makes it both Easy and Convenient to keep the Silk always properly stretched.****OUR AUTOMATIC FEED is Positively SELF-ADJUSTING and RELIABLE.**

Write for Descriptive Circular and Price List to

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 2. Are more simple in construction, less subject to get out of order, and require less attention.
 3. Are more durable, as they have fewer journals and wearing parts.
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 5. Sieves do not choke up, as soft substances in middlings are not permitted to come in contact with the sieve.
 6. Are more readily adjusted to different kinds of middlings.
 7. Are furnished for less money than others.
 8. Last, but not least, by any means, they elevate their own middlings any height and distance necessary, thereby saving an expense, in setting up and starting, of from \$50 to \$150. Right to use fully protected and guarantee given.
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PLEASE READ THIS UNSOLICITED LETTER.

WILLIAMSBURG, PA., MAY 20, 1882.

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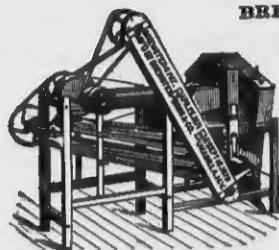
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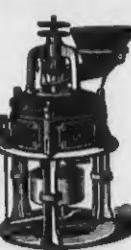
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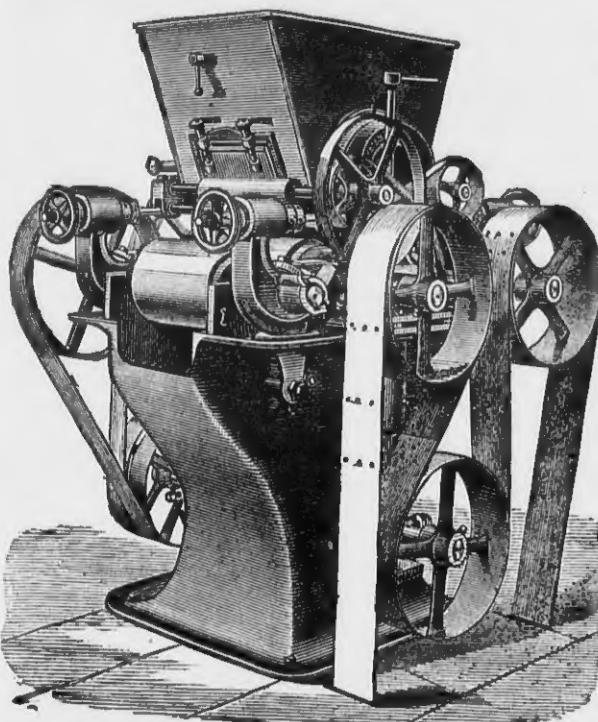
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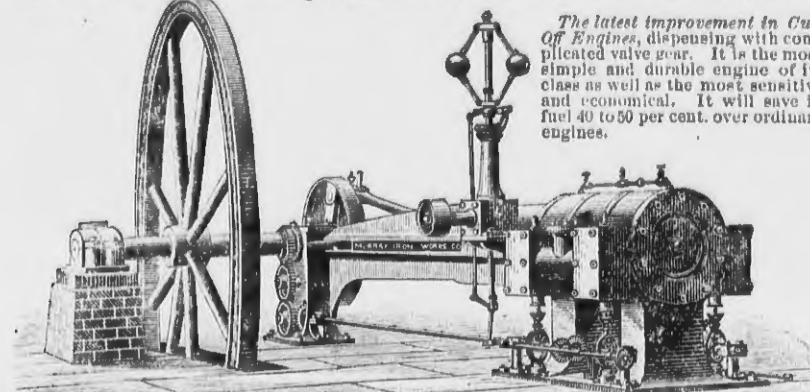
Our System is THOROUGH and RELIABLE, and our Roller Machine Perfected by Long Experience, and the Miller Takes no Chances in using them, as HE DOES with the New Fangled Notions of Drive and Adjustment on many other machines now TRYING TO FOLLOW OUR IMPROVEMENTS and still avoid our Patents, in BOTH of which THEY FAIL. We were the first to advocate the Entire Belt Drive, and were opposed by every other maker, who claimed it was not positive, etc., etc., and now that our Belt Drive is an ACKNOWLEDGED SUCCESS, and will SUPERSEDE EVERY OTHER STYLE, these advocates of Gear Drive have suddenly learned that Belts are the Thing. The same may be said of our Spreading Device, Feed Gates, and Adjustable Swing Boxes. Other Makers are now copying these. ALL these Features, including BELT DRIVE with ADJUSTABLE COUNTERSHAFT and TIGHTENER, the SPREADING DEVICE, FEED GATES, Adjustable Swing Boxes and Leveling Devices, Self-Oiling Boxes, etc., are secured to us by several Strong Patents, and we CAUTION MILLERS in regard to these Infringements of Our Patents and Rights, for we shall look to THEM for Redress. The matter is in the hands of our Attorneys, who will soon take VIGOROUS ACTION against the Makers and USERS OF MACHINES infringing Our Patents.

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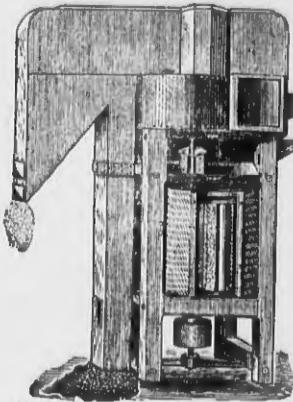
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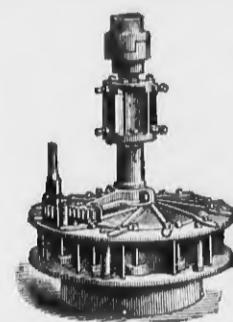
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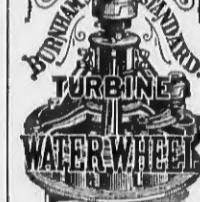
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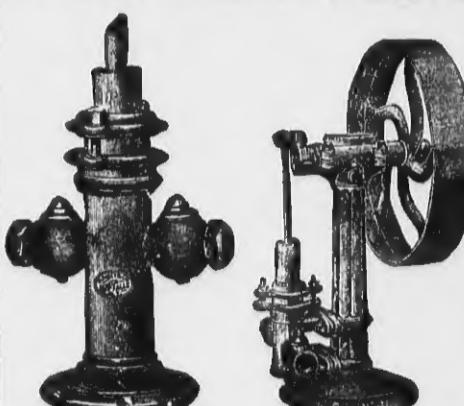
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